THE

GLASGOW MEDICAL JOURNAL.

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ORIGINAL ARTICLES.

A FEW SURGICAL CASES.

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(*Read before the Glasgow Southern Medical Society.*)

(*With Photographic Illustrations.*)

VII.—STONE IN THE FEMALE BLADDER.

Mrs. S., housewife, æt. 20, was admitted to Ward XIV, Western Infirmary, on the 25th December, 1879.

Since patient was five years old, she has suffered occasionally from difficulty of micturition, pain always accompanying the difficulty. It was not, however, until ten months ago that any apprehension arose in her mind regarding her complaint. At that time, when two months pregnant, she experienced considerable pain across the lower part of the abdomen, which induced her to seek medical advice. She tates that she was then treated for tumour of the womb. The pain, however, became worse, and eight months ago, she went to another practitioner, who gave her remedies for gravel. At this time the pain and frequency of micturition were often intensified, as she says, by something in the bladder falling down and blocking the passage.

Four months ago she gave birth to a child, and during delivery she suffered very great pain in the region of the bladder, apparently due to the presence of a foreign body.

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On admission, a sound was passed into the bladder, and the presence of a calculus easily determined—the metallic ring, indicative of a hard stone, was clearly heard.

Examination per vaginam, also easily revealed the presence of a foreign body, which seemed to the touch hard and of considerable size.

December 29th, 1879.—Patient, having been put under the influence of chloroform, was tied up in the lithotomy position, and the stone removed per urethram. The urethra was dilated by a male catheter, next by bullet-forceps, and then by a pair of smallest size lithotomy forceps, when a medium sized pair was introduced, and the calculus removed. The dilatation and extraction, the latter more especially, were very slowly effected, the urethral walls stretching over the forceps and stone, as the perinæum does in instrumental delivery. The mucous lining of the urethra was slightly lacerated by the passage of the rough, mulberry stone, covered with numerous sharp nodules, each about the size of a pea. (See photograph.) The circumference of the forceps with the stone enclosed was 3½ inches, and the stone weighed ʒiij ℈j gr.ij (202 grs.) Immediately after the operation a half grain morphia suppository was introduced, and a worm catheter left in the bladder.

January 2nd, 1880.—The instrument has been kept constantly in the bladder until to-day, when it was removed. Mrs. S. is able to retain her urine perfectly, and can pass it without pain. Slight uneasiness in the left renal region was complained of, but this disappeared under the application of poultices.

January 8th, 1880.—Patient was dismissed perfectly recovered.

VIII.—SUPRA-PUBIC LITHOTOMY.

J. W., mason, unmarried, æt. 26, was admitted to the Western Infirmary, on the 15th December, 1879.

From childhood, W. has been troubled with frequency of micturition, unaccompanied by pain, until he had reached the age of six or seven years. When about twelve years old the pain became very troublesome, and there was also a fixed pain in the left testicle. About seven years ago, patient began to notice that after any extra bodily exertion, blood was mixed with his urine, and at the same periods the pain in the testicle was much increased. As a general rule, he was unable to retain his urine for a longer period than fifteen minutes, although at times, when the pain was less marked, he could keep it for a couple of hours. During the last twelve months,

the water has dribbled away constantly during the night, and when passing it voluntarily during the day, he says he always felt something fall down and stop the stream, causing him to strain violently, ere he could empty his bladder.

On introducing a sound, it was abruptly stopped at the neck of the bladder by what was evidently a very large stone, which apparently filled the contracted viscus; by depressing the handle of the instrument, the beak could be passed upwards, in contact at once with the calculus and the vesical wall. It could be easily felt externally, and the prominence on the abdominal wall, caused by its presence, distinctly observed. After a day or two, possibly from slight handling, the mass seemed to alter its position, and the abdominal prominence disappeared. The urine is muco-purulent, and mixed with blood corpuscles.

After having carefully weighed the different varieties of operative procedure, I resolved, with the sanction of my colleagues, on performing supra-pubic lithotomy.

As I had never had an opportunity of witnessing a similar operation, I read most of the literature on the subject within my reach.

November, 27th.—The patient having been anæsthetised, the pubes was shaved, the bladder washed out with a weak solution of carbolic acid made tepid, and then filled, distended it could scarcely be, with a similar solution. By means of a nozzle with stop-cock fixed in the urethra, the fluid was prevented from escaping. An incision in the mesial line, commencing immediately below the umbilicus, was carried down to the pubes; the dissection was carefully carried down to the bladder, and the reflected border of the peritoneum distinctly brought into view. A tenaculum fixed the bladder, whilst the wall was pierced by a sharp pointed knife, and a nearly transverse incision made; the solution escaped, and the pointed end of the stone filled the wound. The wound was slightly enlarged and the calculus easily extracted with a pair of forceps. As one has seldom an opportunity of seeing the interior of the bladder in the living adult, I looked in; the section showed great hypertrophy, the coats being about half-an-inch in thickness, whilst the mucous lining presented an appearance resembling closely the crimson plush of a footman's breeches. The bladder wound was carefully closed with catgut sutures, the superficial one with silk carbolised, and a small drain of protective, introduced at the pubic end of the wound. The entire operation was performed antiseptically, and the wound dressed in the same manner. A soft catheter having been inserted into

the bladder by the urethra, and a morphia suppository admin-
istered, patient was taken to his ward. The stitching of the
vesical wound was a tedious process, on account of the thick-
ness of the wall as well as the depth at which the contracted
and empty viscus lay in the pelvis. As there was only a short
distance between the peritoneal reflection and the pubis, with
the double object of obtaining more room, and with less risk of
wounding the peritoneum, I made the wound rather transverse
than perpendicular.

November 28th.—Patient has slept for several hours during
the night, and looks well.

November 29th, Evening.—Dressings changed; slight dis-
charge, but no smell or sign of urine; wound healthy.

November 30th.—To-day, when dressing the wound, which I
did with great care, the nozzle of the syringe was gently
inserted into the lower end, on observing which, the man
sprang into a sitting posture in bed, thinking it was some
cutting instrument, and immediately blood and urine escaped
from the wound. He had burst some of the stitches, I have
no doubt, and from this time forward, most of the urine came
by the wound. There was great difficulty in keeping him dry,
yet he continued to progress favourably until the 18th Decem-
ber, when the temperature rose somewhat; he became thirsty;
very irritable and gradually weaker, until the morning of the
23rd, when he expired—twenty-seven days after the operation.
The wound had not closed when he died, yet looked healthy,
and was contracting.

Post-mortem examination showed that death resulted from
pyelitis.

The stone consisted apparently of phosphates, measured $2\frac{7}{8}$
inches in the long diameter, $7\frac{3}{8}$ inches in circumference in the
same diameter—whilst the circumference of its short diameter
is $4\frac{7}{8}$ inches. It weighed, on the day of removal, ℥iij ℈iij, or
1,620 grs. (See photograph.)

IX.—SIX CONSECUTIVE CASES OF OVARIOTOMY.

E. M'M., power-loom weaver, æt. 27, unmarried, was
admitted to the Western Infirmary, 1st October, 1878.

Patient complains of a swelling in the abdomen, and of
pain, extending over the anterior aspect of right thigh.
Two years have elapsed since she observed the swelling,
which she thinks came suddenly, and which has increased
but slowly since. ·The pain in the right thigh began about
eight years ago, but, until the swelling appeared, only at

intervals, having no relation to the menstrual periods. Since the tumour was noticed, the pain has been continuous, and most severe at the monthly changes. She first menstruated when she was sixteen years of age, and continued to do so regularly, until the first appearance of the pain, when the menses were suppressed for a period of six months. From this time until the tumour was noticed, she was quite regular, when there was again a discontinuance for six months. At present, the discharge, although scanty, is regular. She inclines to lie on the left side. The circumference at the umbilicus is 31 inches. After careful examination, it was decided to wait for some time, and, in the meantime, to let her go home, which she did on 10th January, 1879.

She returned on the 3rd March, 1879, anxious to have the operation performed, as she states that she suffers much discomfort and pain from the presence of the tumour. The abdominal circle at the navel now measures 34 inches.

March 13th.—Ether was administered to the patient, and, through an incision in the abdominal wall, of from three to four inches in length, the cyst was removed. It was found to be unilocular, free from adhesions, and contained 11 pints of nearly transparent fluid. The pedicle was ligatured with catgut, and the wound carefully closed. The operation throughout was strictly antiseptic. During the operation patient was sick, and continued so for a few hours afterwards.

March 16th.—Patient doing well; has had morphia suppository during the previous two nights, and slept; no pain.

19th.—Still progressing favourably, her average temperature being 100°, and pulse 120; the wound has not yet been dressed.

21st.—Rather restless during the last two days.

24th.—Keeping very well since last note; temperature unaltered since previous date; pulse from 104 to 120; dressings changed; wound looks well, and pretty firmly united. No pain. In the evening patient had a small dose of castor oil, after which she was sick, but did not vomit.

25th.—Bowels opened this morning; she feels well.

April 4th.—Patient has continued to improve, without the development of a single bad symptom. Gauze dressings discontinued, and boracic lint applied.

9th.—Dismissed well.

No. 2.—Mrs. M'I., æt. 45, was admitted to the Western Infirmary on the 12th March, 1879.

Patient has always been a healthy woman, and has borne

nine children, the youngest being five years old. She still menstruates regularly.

About fifteen months ago, she observed a small swelling about the size of a hen's egg, in the left iliac region, about two inches below the umbilicus. This tumour increased in size very slowly, and was unaccompanied by pain until two months ago, when, whilst lifting a heavy weight, she felt as if something were giving way in her abdomen. After this time the swelling increased rapidly, with much pain, especially during the last fortnight, during which period it has been so intense as to prevent patient sleeping at night. On examination, a large globular tumour, dull on percussion, and with extremely fluid contents, was easily diagnosed. It could be partially moved from side to side. The umbilicus was prominent, and the skin over abdomen was tense and glistening, while the greatest circumference was 35 inches.

March 26th.—The patient having been anæsthetised, an incision three inches in length, in the abdominal wall, commencing below umbilicus, brought into view a large ovarian cyst; this was tapped, and a large quantity of thick, serous fluid discharged. The bulk of the tumour still, however, remained considerable, and numerous secondary cysts, containing bloody serum, and a thick, gummy-looking fluid, were found. The cyst was, in fact, multilocular; there were no adhesions, and it was easily removed, and the pedicle ligatured with carbolized gut.

During the operation patient was sick, and, on removal to bed, vomited. Hot bottles were applied to her feet, and a morphia suppository administered. During the afternoon patient slept a good deal. Her temperature at 12 noon (two hours after operation) was 97·4°; in the afternoon it rose to 100°; at 8 P.M. 101·2°; pulse 120; at 12 midnight 100·2°; a morphia suppository was given.

March 27th.—Mrs. M'I. slept well during the night, and looks much refreshed; pulse (8·30 A.M.) 102; temperature 99·2°. Since operation, she has not been able to retain any milk which has been given her; has had ice to suck. Temperature at 8 P.M. 100·8°.

28th.—Slept well; sickness quite gone; temperature at noon 99·6°; pulse 98; able to retain a little beef tea and milk.

April 1st.—Since last note, patient has not been quite so well.

April 5th.—Much better; no discharge from wound, which looks well.

April 26th.—Patient dismissed; wound perfectly healed.

No. 3.—Mrs. M'N., housewife, aged 36, was admitted to the Western Infirmary on 20th September, 1879.

About the end of May last (1879), patient noticed a small painless swelling in the left lumbar region, which, in a few weeks, became central in position, although, as to size, it remained stationary. In the month of July it began to enlarge rapidly, and has continued to do so until the present time. Two weeks ago, patient was attacked with severe pain in the left side of the abdomen, accompanied by nausea, but no vomiting; on the 18th instant the pain spread to the right side, extending thus on both sides of the umbilicus.

Mrs. M'N. has always enjoyed good health. She had one child—now seven years of age. She has always menstruated regularly. Since the swelling began, the discharge has diminished in quantity. On examination, the surface of the abdomen was seen to be smooth and uniform; the veins were not enlarged, and the umbilicus, although level with the surrounding skin, did not protrude. A distinct wave of fluctuation could be discovered passing from one side of the tumour to the other, and on pressure being applied above, and to the right of the navel, an expression of pain was elicited. Dulness on percussion existed over the entire anterior surface of the abdomen, while in front of the kidney, in either flank, it is resonant. The measurements were as follows:—

> From ensiform cartilage to navel, $7\frac{1}{2}$ inches.
> From navel to middle line behind, right side, 18 inches.
> From navel to middle line behind, left side, 17 inches.
> Complete circumference at navel, 35 inches.

Examination per vaginam gave no indications of uterine complications.

October 6th.—This morning, patient was put under the influence of sulphuric ether, and, through an incision in the middle line of the abdomen, of about four inches in length, the tumour was exposed, tapped, and subsequently removed. Adjoining the pedicle was a solid portion, of about the size of a cocoa nut; yet the major part of the tumour consisted of a large cyst, containing a thick, brownish fluid. The pedicle was ligatured with strong carbolised catgut, and returned into the abdominal cavity; the edges of the wound were brought together by means of deep sutures of silk soaked in carbolic oil, and superficial sutures of horse hair. The operation was performed under the spray, and the wound dressed antiseptically. There were no adhesions, and little hæmorrhage; patient bore the operation well.

October 7th.—Immediately after operation, a morphia suppository was administered, and a good sleep was obtained. She has had no sickness, suffers little or no pain, and has no inclination for either food or drink.

October 8th.—Very well; slept well during the night. Took 4 oz. of fluid meat juice and several ounces of milk.

October 10th.—Wound dressed; looks well. No disturbance of any kind.

October 12th.—Patient has continued well until to-day, when she was seized with persistent sickness and nausea, everything she swallows being immediately rejected. She complained much of flatulence, and of a feeling of tension in the regions of the stomach and bowels. Temperature and pulse are, however, normal. In the evening it was deemed inadvisable to give any nourishment by the mouth, and beef tea and brandy were given by enemata. Afterwards, $3\frac{1}{2}$ oz. beef tea and $2\frac{1}{2}$ oz. brandy were given by enema every four hours; and, when pain was very great, a morphia suppository was administered. To relieve the flatulence, a mixture containing sulphuric ether and aromatic spirits of ammonia was prescribed.

October 15th.—Since last note, patient has been rather better. Nothing has been given by the mouth, except in soda water; and the vomiting has occurred only once or twice each day, simple water, or water coloured with bile, being ejected. Patient looked better, and felt more comfortable, the flatulence having considerably abated. Wound dressed, and looking well.

October 17th.—Yesterday evening, about six o'clock, Mrs. M'N. became very sick, and vomited a brownish, offensive smelling material, which, on examination, was considered to be fæcal. She complained of an uneasy feeling in the left side, near the wound. A dose of castor oil was administered and retained. The vomiting continued more or less throughout the night, the matters ejected being distinctly fæcal. The temperature and pulse remained normal, and there was no appearance of collapse. On dressing the wound, it was found that the continual movement of the abdominal walls, caused by the repeated sickness, had prevented the superficial edges of the wound from uniting properly. Deep union had, however, taken place, and the discharge was small in amount. The surface of the abdomen was distended and irregular, a coil of small intestine being distinctly mapped out on the left side of the wound. As it was considered likely that an adhesion had formed between a fold of intestine and the deep

edges of the wound, a large enema of soap and water, with half an ounce of turpentine, was given with the intention of producing a full evacuation, which might possibly cause rupture of the suspected adhesion. A free motion of the bowels resulted, and patient seemed considerably relieved thereby.

October 20th.—During the past two days patient has been remarkably well—no sickness; has taken nourishing food by the mouth; has slept well, and suffered no pain. This morning wound was dressed; no discharge. The coil of bowel previously noticed was still to be seen prominently marked. About 15 minutes after the dressing, patient became very sick, and vomited a considerable quantity of fluid fæces. This attack lasted for upwards of an hour, and was accompanied by much pain. A morphia suppository was given, and some time after, an enema of soap and water, with turpentine—the latter bringing away only a small quantity of fæcal matter. Patient was, however, much relieved by it, and the sickness greatly decreased, and she felt disposed to sleep. Pulse weak and rapid—134; temperature, 100·4°. A dessert spoonful of brandy to be given every half hour.

Evening—9 P.M.—Mrs. M'N. much improved; has had no more sickness, and feels inclined to sleep.

October 21st.—Slept well during night; bowels opened naturally; abdomen quite flaccid; brandy and beef tea enemata to be continued.

October 22nd.—Patient has remained free from sickness; has taken milk and beef juice by mouth; bowels opened twice naturally; temperature normal; pulse 98. Slept well.

October 23rd.—Slept soundly; feels well.

From this date Mrs. M'N. continued to regain strength, and was dismissed on the 15th November.

No. 4.—A. G., æt. 54, unmarried, was admitted to the Western Infirmary, 18th December, 1879.

Between three and four years ago, patient observed a swelling, central in position, in the hypogastric region. This swelling has gradually increased in size, unaccompanied by pain, although for two years after its appearance she was much annoyed with sickness and vomiting, which reduced her very much in strength. During the past year this has entirely disappeared, and she is now in very good health. She had menstruated regularly until the appearance of the swelling, since which period the discharge has entirely ceased. On examination the abdomen was seen to be very prominent, with a firm elastic feeling and distinct fluctuation. Percussion

gave a dull sound over the front and sides of abdomen, the flanks, however, being clear.

The uterus, though somewhat drawn up, was otherwise quite normal.

Measurements of the abdomen :—

Circumference at umbilicus, . .	35 inches.
„ of right side, . .	17 „
„ of left side, . .	18 „
From navel to ensiform cartillage, .	$7\frac{1}{2}$ „
„ „ pubes, . . .	$8\frac{1}{2}$ „

24th December.—Ether having been administered to patient, an incision, beginning immediately below the umbilicus, was carried downwards for three inches. Through this opening, after draining off the fluid, a unilocular parovarian cyst was removed. Adhesions existed in front to the parietal peritoneum and omentum. The pedicle of the tumour was transfixed by a needle, armed with strong catgut, and ligatured on each side. The cavity of the peritoneum was then carefully sponged out, and the abdominal wound sewn up. The entire operation was performed under the spray. A $\frac{1}{2}$-grain morphia suppository was administered, and the patient taken to bed. There was nothing noteworthy in the course of the case towards convalescence. There was only half-an-ounce of brandy used in the case, and by the way, ovarian cases, difficult cases especially, where there is much shock seem to be almost the only surgical cases in which stimulants are actually required.

Patient sat up on the 3rd January, 1880, and was dismissed well on 15th January, 1880.

No. 5.—This patient went to Edinburgh to have the operation performed by Dr. Thomas Keith, at the time that his revered father was on his death-bed. The woman was exceedingly importunate ; and as Dr. Keith could not undertake the operation for some weeks, he did me the honour of recommending her to come through to Glasgow. Mrs. M., aged 44, farmer's widow, was admitted to the Western Infirmary on 12th February, 1880. Patient has had one child, now $6\frac{1}{2}$ years old, and five years ago she had a miscarriage. She states that she was always a healthy woman until fourteen months ago, when she began to experience a severe pain in the right side, which has varied in intensity from time to time. Soon after its development her abdomen began to enlarge, the swelling being common to both sides equally : in a short time, however, the left side increased more rapidly in

size than the right, and has since continued to be larger. In April last, menstruation, which had hitherto been perfectly regular, ceased, and the pain increased so much in intensity that patient was obliged to remain in bed. Fomentations were applied, and the pain became much less severe. The swelling, which had up to this time been increasing but slowly, now began to develop with great rapidity; so much so, that since, the patient has been confined almost constantly to bed, owing to the great discomfort she experienced in attempting to go about. Patient's general health also suffered considerably, and she became very subject to bilious attacks. Five weeks ago the swelling had become so great that tapping was performed; and, according to patient's statement, four gallons of a yellowish fluid drawn off. Since then the fluid has returned very rapidly.

On examination the abdomen was found to be enormously, but uniformly, distended, the umbilicus being a good way to the left side of the median line. Very distinct fluctuation was perceptible all over the abdominal part, and extending right down to the flanks. Percussion was dull generally, excepting far down on the flanks, where a clear note could be made out, more marked on the left side.

The measurements were—

> Circumference at umbilicus, . 46 inches.
> From pubes to xiphoid, . . $20\frac{1}{2}$,,
>   (the umbilicus being situated midway.

The tumour does not apparently, and has not at any time, interfered with the respiratory action. Patient complains at present of a severe pain at a point in the right side, at which there is a feeling of resistance, and where adhesions seem to exist.

18th February.—This morning patient was put under the influence of ether, and ovariotomy performed. An incision, which was subsequently enlarged to about 7 inches in length, was made through the abdominal walls. The cyst, thus exposed, was punctured with a large trocar, and a quantity of a brownish fluid evacuated. Adhesions existed between the cyst and everything with which it lay in contact: the omentum was glued over its front—the small intestines were adherent behind the omentum—and laterally it adhered to the abdominal walls—inferiorly it was adherent to the uterus. The pedicle, which was very broad, was transfixed with a needle bearing strong catgut, ligatured on both sides, and divided. It was found to consist mainly of a whitish pulpy

substance. The abdominal cavity was carefully sponged out, a glass drainage tube was fixed in the lower end of the wound, and the incision closed with deep sutures of carbolised silk, and superficial ones of horse hair. Gauze dressings were applied to the wound, and an india rubber sheet, in which sponges were wrapped up, was put over the drainage tube. The entire operation was conducted under the spray, and lasted one hour and forty-five minutes. The shock was very great, and I think few of those present expected that the patient would survive many hours.

9 P.M.—Temperature, three hours after operation, fell to 95°, but since then has risen to 99·7°. A ½-grain morphia suppository was administered immediately after the operation, repeated in the evening. A dessert spoonful of brandy has been given every hour—now the interval will be lengthened to two hours. There has been no sickness and no pain, excepting that which was present before the operation. The sponges were changed under the spray, yielding on wringing ℥vss of bloody fluid. While stupid from the ether, patient was extremely restless and tossed about from side to side a great deal.

19th February.—Patient passed a good night: very quiet: amount of urine since operation ℥xx: sponges changed— in morning ℥ij, and in the evening ℥j of fluid squeezed from them; temperature 99·2° to 90·4°; pulse 104 to 124: no pain. In the afternoon vomiting set in, nothing being retained in the stomach, except brandy and soda water. Enemata of beef tea, ℥iv, were given every four hours; brandy to be continued —dessert spoonful every two hours; morphia suppository repeated.

20th February.—No more sickness, nothing but brandy being given by the mouth: enemata continued until now: passage from bowels this afternoon: urine ℥xvi: temperature 98° to 99°: pulse 104 to 120: sponges in morning gave ℥ss, in the evening ℥ij: suppository repeated.

22nd February.—Temperature continues normal: patient able to take food by mouth without sickness: brandy stopped: sponges changed night and morning, yielding ℥ij of clear fluid each time.

23rd February.—This morning drainage tube was removed, and was observed to be half full of clotted blood: wound dressed: looks quite healthy; no appearance of inflammation or discharge: antiseptic dressing still kept up.

24th February.—Wound dressed and union found complete, the opening where the tube had been being quite closed.

28th February.—Enema given, as patient was complaining of flatulent pain.

1st March.—Boracic lint applied to wound: patient allowed to get up.

8th March.—Mrs. M. is now much stronger than before the operation, and is going about.

10th March.—Patient dismissed—well.   Pulse 78, and normal in character.

Remarks.—The cyst and its contents weighed over forty pounds, and the interior of the cyst was studded with innumerable cauliflower looking excrescences, varying in size from a pea to a pigeon's egg.

No. 6.—E. C., æt. 33, single, admitted 12th May, 1880.

Patient states that about two and a half years ago she noticed a circumscribed swelling of about the size of an egg in her right iliac region.   A year previously she had suffered from a severe paroxysm of pain, lasting for about an hour, in the situation where she afterwards noticed the tumour. This pain did not recur till the following year, when she felt the tumour above mentioned.   About this time she was much troubled with incontinence of urine.   The tumour gradually increased in size, and she became subject to attacks of pain lasting from one to two weeks, with intervals of from two to three months, during which she was able to continue at her work.   Patient has never been troubled with vomiting, and has always menstruated regularly.   Two years ago she was much troubled with bronchitic cough and hæmoptysis, and auscultation reveals the existence of a systolic murmur—otherwise, she is very healthy and in good condition.

Measurements :—

Circumference at umbilicus, . .	37	inches.
From xiphoid to pubes, . . .	$17\frac{1}{2}$	„
Umbil. to right ant. sup. spine, .	8	„
„ left „ „ .	9	„
„ vertebræ on right side, .	17	„
„ „ left side, .	20	„

13th May.—This morning, patient was anæsthetised, and taken into the theatre, which as usual was heated to 70°.   An incision about 4 inches in length, in the middle line, was made below the umbilicus, exposing the cyst wall, which was punctured, and a quantity of dark glutinous fluid evacuated. The cyst, unadherent and unilocular, was drawn out of the wound, and ligatured with catgut in the usual way.   The steam antiseptic spray was used during the operation.   The edges of the wound were brought together with carbolised

silk and horse hair sutures, and antiseptic dressings applied. A half grain morphia suppository having been administered, the patient was removed from the table and placed in bed. 10 P.M., temperature 100·4°; pulse 86.

14th May.—Patient somewhat restless, but no pain complained of; morphia suppository given this morning; temperature, 10 A.M., 98·8°; pulse 86; 10 P.M., 100·6°; pulse 86.

15th May.—Patient did not sleep last night, and complains of pains in her legs; in the evening a *scarlet eruption, strongly marked*, made its appearance all over the body, but especially marked on the wrists, arms, and inside of the thighs; Temperature,' 10 A.M., 100·6°; pulse 94; 10 P.M., 100·2°; pulse 96; morphia suppository administered.

16th May.—Slightly delirious last night, with profuse perspiration; much complaint made of irritation of skin; the rash was too bright in colour for measles, and there was no suffusion of the eyes or sneezing—it resembles scarlet fever very much, and I thought it very likely that, if so, we should lose our patient, as it would probably prove as fatal occurring in ovariotomy, as it is known to be in childbirth; however, there was no sore throat, no strawberry tongue, and there had been no vomiting. As it appeared now, nothing exactly resembling it had hitherto come under my observation. Temperature, 10 A.M., 100·2°; pulse 98; 10 P.M., temperature 101·8°; pulse 104; a dose of castor oil was given, and the bowels freely opened.

17th May.—Still restless at night and slightly delirious, but quite collected during the day; this morning the dressings were changed, and the wound was found to be uniting by first intention; the rash, especially that under the dressings, appears to be assuming a vesicular character. Morphia suppository administered during the night.   Temperature, 10 A.M., 102°; pulse 96; 10 P.M., temperature 103·2°; pulse 98.

18th May.—Still restless.   Castor oil given with desired effect.   Temperature, 10 A.M., 102·4°; pulse 84; 10 P.M., 102·6°; pulse 96.   Eruption continues the same in appearance.

19th May.—Delirious last night; cream of tartar given for drink.   Temperature, 10 A.M., 102·2°; pulse 96; 10 P.M., 103·4°; pulse 98.

20th May.—Last night, as patient seemed to be suffering from want of sleep, 30 grains of chloral were administered, with the result of causing excitement, not sleep.   Eruption still present.   Temperature, 10 A.M., 101·6°; pulse 100; 10 P.M., 101·6°; pulse 94.

21st May.—Dressings changed; wound quite healed.   Erup-

tion immediately beneath the dressing, and only there, has become quite vesicular, presenting a most beautiful example of pemphigus, each vesicle being about the size of a split pea. Temperature, 10 A.M., 100·2°; pulse 94; 10 P.M., temperature 100·2°; pulse 86.

22nd May.—Patient much better, having had good sleep last night. Temperature, 10 A.M., 100°; pulse 90; 10 P.M., temperature 100·6°; pulse 82.

23rd May.—Some sutures removed; wound dressed with boracic lint. Temperature, 10 A.M., 99·8°; pulse 90; 10 P.M., temperature 100°; pulse 87.

24th May.—Passed a good night and is doing well.

26th May.—Patient removed to open ward.

27th May.—Dressed; remaining sutures removed; patient had permission to leave her bed.

4th June.—Sent to Lenzie Home, quite convalescent.

The explanation of the rash seems to be that the carbolic acid acted as an irritant on an extremely sensitive skin—the vapour was kept in by the bedclothes, thus placing the patient in a carbolic acid vapour bath. The want of congruity between the temperature and the pulse will have been noticed; it looks as if the high temperature here were a symptom by itself, and that it was confined to the skin, and unaccompanied by the usual rise in the pulse. Cases of local irritation from carbolic acid are not uncommon. All the foregoing operations were performed in the operating theatre, in presence of the students and without any precautions, save having the air at 70°.

I cannot here omit referring with pleasure to the care and skill displayed by my head nurse in the after treatment of those ovarian cases; and as a good deal of the success of a surgical case depends on the nursing, it may be stated, as an example of how patients are looked after in the Western Infirmary, that not a single bedsore was permitted to form on a patient in my wards, during the past twelve months.

September, 1880.

NOTE ON THE TREATMENT OF CLUB FOOT.

By J. CRAWFORD RENTON, M.B. Ed.,
Extra Assistant Surgeon to the Western Infirmary, Glasgow.

IN the *British Medical Journal* for March 13th, 1875, Dr. George Buchanan, Professor of Clinical Surgery in the Uni-

versity of Glasgow, recommends the following procedure in the treatment of talipes varus:—After division of the tendo Achillis, he says—"The next stage is the division of those structures which maintain the incurvation of the astragalo-scaphoid joint, and which pull the ball of the great toe towards the heel. To effect this, the tenotomy knife is to be entered at the inner edge of the foot just behind the tuberosity of the scaphoid bone. It is to be kept flat and pushed under the skin till it reaches to the middle of the sole; then it is to be turned with its edge to the plantar fascia, which is to be divided with a sawing movement of the knife, the parts being kept in extreme tension by an assistant. When the knife has passed through this part of the fascia, the point is to be dipped down so as to divide as far as possible the septum of fascia between the abductor pollicis and the flexor brevis digitorum, and then the whole of the muscular substance, down to the tuberosity of the scaphoid, is to be cut through; and before removing the knife from the aperture of entrance, the point may again be depressed, and the tendon of the tibialis posticus divided proximately to its insertion into the scaphoid."

In eight cases of talipes and equino-varus, after dividing the tendo Achillis, I have adopted the above treatment with most satisfactory results. In the first two cases a little difficulty was experienced in rectifying the deformity, this was evidently due to my not having effected a thoroughly free division of all the resisting structures which Dr. Buchanan so plainly recommends. In the subsequent six cases the directions were more carefully carried out, with the best result, and in none was there any inconvenience experienced either in the way of hæmorrhage or irritation of any kind.

The form of splint used was for the first two months that recommended by Dr. Heron Watson, which consists of two pieces of tin, one being moulded to the calf of the leg, and the other to the sole of the foot, and connected by a metal rod. The foot piece of this splint can thus be bent to any angle, and the limb is bandaged to it daily, after careful manipulation of the muscles; the angle is gradually increased until the foot is in good position. This splint is easily obtained for a few shillings, and can be applied by the mother or nurse of the child after one or two lessons.

At the end of two months, the sandal, as used by Dr. Banks, of Liverpool, was employed, and it has likewise the advantage of being non-expensive. It consists of two pieces of leather, each provided with two metal rings, one piece is fastened

round the foot, the other is fixed immediately above the knee-joint, the rings in each case being to the outside; passing between them are one or two india-rubber muscles which are hooked into the rings. If the child is fat, and the thigh piece seems inclined to slip, this may be remedied by attaching to its upper and outer side a narrow strap of leather, which is fastened above to the stays. By means of this apparatus the child is able to use all his muscles, and the weakened peronei are assisted in their action by the india-rubber muscles which are applied sufficiently tight to evert the foot. When the child is able to walk, the foot piece rings are sewed on the outer side of a lacing boot, and the artificial muscles continue to assist the child in progression.

DIABETES INSIPIDUS, WITH GREAT ENLARGEMENT OF THE BLADDER: IMPROVEMENT UNDER TREATMENT.

By JAMES FINLAYSON, M.D.,
Physician and Lecturer on Clinical Medicine in the Western Infirmary,
Glasgow.

A LAD, 16 years of age, was admitted into the Western Infirmary on 16th June, 1879, affected with diabetes insipidus. The illness seems to have come on somewhat suddenly when he was 8 years of age. At that time he had had measles, of which one of the family died then; the attack seems to have been very slight, but at its termination he was seized with a violent fit of vomiting, and about six or eight days thereafter his mother noticed that he began to wet the bed at night, and that he was drinking a large quantity of water. The wetting of the bed continued up till about a year before admission; since then he had been better in this respect and also stronger generally. He had been of late working in a foundry as a moulder, but he looked very pale and thin. There was nothing very notable in the family history; the father had died of "inflammation of the lungs," and one of the brothers had been threatened with "decline," but had recovered; his mother and several brothers and sisters were living, and others had died of infectious diseases.

On examination, a tumour was found in the lower part of the abdomen, extending an inch above the umbilicus; it trans-

mitted a distinct wave on striking it, and it was dull to percussion, but the dulness did not extend into the flanks ; it became greatly reduced in size on getting him to pass water, and it was clearly a distended bladder. It must be stated, however, that it was in no way painful even on free handling ; the patient had no difficulty in at once passing water when asked to do so, and as already noted, the incontinence of urine, although formerly troublesome, had now passed away.

But although there was no obvious paralysis of the bladder, revealing itself either by retention or incontinence, it could not be said that the organ was simply enlarged and otherwise natural. No doubt its capacity for practical purposes was greatly increased, and this was evidently a considerable convenience to the lad, as he had not to go so often to pass water either during the night or day as he would otherwise have required to do.

This will be best illustrated by giving the quantities passed on a given day ; several such measurements were made, and this is a fair sample. The quantities of water consumed amounted at this time to between 400 and 500 oz. in the twenty-four hours ; this of course was exclusive of all fluids in his food.

<div align="center">URINE PASSED.</div>

29th June,	2·30 A.M., 48 oz.	29th June,	7·0 P.M., 50 oz.
„	5·0 A.M., 42 „	„	8·30 P.M., 48 „
„	9·0 A.M., 48 „	„	10·30 P.M., 38 „
„	11·0 A.M., 50 „		——
„	2.10 P.M., 55 „		414 oz.
„	6·0 P.M., 35 „		

But although these figures indicate a decided increase in the capacity of the bladder, it seemed on further tests that the urine was by no means fully expelled during an act of micturition ; and this remark applied not merely to a casual passing of water, but even to those occasions when he was asked to take plenty of time and to pass as much as he could. This was shown by finding that the dulness on percussion still persisted very markedly above the pubes, although of course greatly diminished in its extent ; and further, by ascertaining that the patient could, within a few minutes of his first act of micturition, pass a very considerable quantity more ; and that after a further interval a third quantity could be obtained. It seemed as if the enlarged bladder, with its hypertrophied muscular coat, required periods of rest to contract thoroughly on its contents ; and the analogous phenomena in the uterus during labour, and also of a distended rectum expelling large

fæcal masses, at once suggested themselves. This was tested and demonstrated frequently. On 1st October it is noted:—

The bladder being full and distended he passed at one act, ...	40 oz.
The dull percussion diminished; after verifying this, he tried again, say after five minutes or less, and passed at once, ...	12 oz.
After other three minutes, he passed without difficulty, ...	6 oz.
	58 oz.

Another trial, made on the day of his dismissal, is noted as follows :—

First micturition; giving him plenty of time, and even insisting on his trying further, when disposed to stop towards the end of the act, .	50 oz.
Dulness on percussion found about two inches above pubes; patient requested to try again, after an interval of say two or three minutes,	8 oz.
After a further interval of two or three minutes, .	5 oz.
After a further interval of three minutes, . .	2 oz.
	65 oz.

The explanation of this curious condition is to be sought in the occurrence of the disease in childhood; the great secretion of urine seems to have led to a distention of the bladder and an overflow or unconscious discharge of the urine during the night when the child could not be expected to attend to the calls. But this only occurring during the night does not seem to have led to a serious paralysis of the bladder, and with the growth of the boy the organ became developed somewhat in proportion to the demands made upon its capacity.

The treatment adopted in this case was by means of large doses of valerian, as recommended by various authorities. There is some difficulty in obtaining a really efficient preparation suitable for administration in large doses. After a few trials of moderate quantities of the tincture, the aqueous extract was begun on 4th July, in half drachm doses thrice a day; this was increased on 8th July to 40 grain doses; on 11th July to one drachm; on 16th July to a drachm and a half; and on 29th July two drachms thrice a day were given. The extract was liquified with water, and the patient did not make

the slightest objection to take it; in fact he seemed if anything to like it.

The lad was placed on ordinary diet, and no restriction was put on the quantity of water consumed. His mother said that if the amount of water were curtailed at any time he suffered from headache and sickness.

In addition to the above treatment, the use of the continuous galvanic current was tried, passed from the spine to the region of the kidneys for five minutes. This was begun on 1st July, and continued at first daily, and subsequently every second day.

On 31st July cod liver oil was begun, and some purgative pills had to be used occasionally.

A few trials of the subcutaneous injection of pilocarpine were made in the beginning of October; salivation was produced, but no very notable diminution of the urine occurred, and as it gave rise to disturbance of the stomach and loss of appetite, it was not continued.

The result of the treatment, as a whole, was distinctly favourable. No doubt, part of the improvement might be due to better food, as the people seemed very poor, and to rest from work, for which the patient was obviously unfit; but the impression conveyed to those who watched the case was that the remedies were entitled to the most credit; and, in particular, it appeared that the improvement was greatest after the large doses of valerian were fairly reached. The thirst became less, and the frequency of passing urine diminished, so that he had only to get up twice during the night as a rule; he likewise began to put on flesh, to gain strength, and to improve in appearance.

> Three months before admission he had weighed 6 st.   6 lbs.
> On 17th June, the day after admission, .   . 6 ,, $1\frac{1}{2}$,,
> On 31st October, the day of dismissal,   .   . 7 ,,

The amount of urine passed likewise underwent a gradual, but notable diminution.

> During the month of July the daily amount
>   ranged from about   .   .   .   . 480 to 300 oz.
> During the month of August,   ,,   . 340 to 210 ,,
> During the month of September,   ,,   . 300 to 255 ,,
> During the month of October,   ,,   . 257 to 250 ,,

The specific gravity of the urine varied from 1002 to 1004. It never contained albumen or sugar; the secretion was neutral or slightly acid.

He was sent to the Lenzie Convalescent Home for a week

or two, and has been able to work ever since, at first as a moulder, latterly as a rivetter, except during a short period he was laid up with a burn on the foot. When seen on 15th October, 1880, the lad said he weighed 7 stones 3 lbs. He still feels very thirsty, but the degree of thirst is variable; he passes much water, but of course cannot give the quantity. The condition of the bladder remains exactly the same as already described, with regard to its size and the process of emptying it; and the character of the urine is unchanged; but to judge from his appearance he seems to be about as well as when he left the hospital a year ago.

SHORT NOTES ON A RARE OBSTETRIC CASE, WITH SPECIMEN OF ACEPHALOUS FŒTUS.

By W. SINCLAIR THOMSON, M.D., F.R.C.S.E.,
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(Read before the Hunts Medico-Chirurgical Society, October, 1880.)

MR. PRESIDENT AND GENTLEMEN,—The following is a brief report of a case which occurred in my practice during the past year, which appears to me worthy of being recorded as illustrative of singular defective development, which both complicated diagnosis and delivery. The following are the particulars, copied by me from the Register, as entered by my assistant at that time.

" E. J., married, æt. 43, ninth confinement. Patient states that she has always been delicate, even before marriage; and, indeed, her features portray this. On the 7th November, 1879, I was sent for to attend her at 11·30 A.M. She states that she had a good time with her first child, which, however, was born dead at full time, as also was the case with the eighth child. Her next three children were delivered alive by the aid of instruments, and were considered large, and with normally proportioned heads. The fifth and sixth children were delivered naturally at full time, and alive, the last before medical aid arrived. Her seventh child was delivered by turning, why, she cannot say.

" When I arrived I found the patient suffering from severe false pains, the os soft and yielding, though there was no dililation. The abdomen appeared large, and there was much

amniotic fluid; has had difficulty in micturition during the last month.

" At 7 P.M. I was summoned again, and found her in strong labour; on examination, found the head well down in the true pelvis, with the face presenting.   I got my forefinger into the child's mouth and distinguished the hard gums. Passing the fingers over the eyes, I found them unusually prominent; the symphysis of the lower jaw also was not distinctly marked, but rounded, hard, and continuous with the thorax, no sulcus or neck being interposed.   I could pass my hand freely over the upper portion of the chest and face, which looked towards the sacrum; but was not so successful in endeavouring to do so behind the pubis, where I felt instead of the occiput a number of bony processes or angles, which seemed to exist as high as my finger could reach.   Thinking this a very unusual condition of the head, not feeling the occiput, and imagining that there must be a protuberance higher up, which would risk her safe delivery, not liking the responsibility of using the forceps when I could not find a proper hold on the head for them, I sent for Dr. Thomson, who came to my relief.

" While I administered chloroform, he applied the long straight forceps, which, however, would not hold; he next used the short forceps, which also slipped; but with Simpson's long curved forceps he succeeded in getting the blades over the child's shoulders, and by my making pressure over the fundus uteri, a female child was born dead.   The mother had felt the movement three days before.   There was no difficulty with the placenta.

"Immediately after birth the child's face presented a congested appearance.   From the orbits the whole length of the spine was a continuous plane, there being no head.   From one inch posterior and inferior to the orbits, to within three inches of the buttocks, or to a point in the back corresponding to the umbilicus in front, the spine was quite uncovered by integument, and was fiddle shaped.   From a point a little behind one ear to its fellow opposite measured a little over two and a half inches, and the same at the lowest part, while between these at the narrowest part it measured little over one and a half inches.   The spine was bifid its whole length, with the processes very prominent, and covered only by a thin membrane through which you could distinctly see the spinal cord, also divided into two bands, lying between the spinous processes.   The deficiency is in most cases in the lumbar or sacral vertebræ.   There was no distension of the spinal mem-

branes from pressure of subarachnoid fluid, nor was there any appearance of a tumour having burst during the act of birth.

" The face measured only 9 inches in circumference a little above the ears. The face of the child was quite immovable upon the thorax. The arms, legs, eyes, ears, nose, mouth, anus, and genitals were perfectly formed. The child measured 16 inches from top of orbits to soles of feet.

" The patient, her husband, and the rest of her children have well proportioned heads. I considered the pelvis sufficiently roomy to allow of the passage of a full sized normal child. The woman progressed favourably."

From these notes you would not anticipate difficulty in delivery; but, when we recall the anatomy of the fœtus (which I now show), you will observe that the want of a head and flexible neck to take the pelvic " carus " curve was the great difficulty, every pain only jammed the presenting part against the sacrum.

It was then only by compressing the shoulders and pulling forwards the face I was able to mould the fœtus to make the curve. Had the child been alive, the means used would not have endangered its life.

In conclusion, I would add, for the benefit of those interested in the subject of acephalism, that you will find in the *Medical Times and Gazette*, vol. i, 1862, p. 577, a case. Also one by Dickenson—neither brain, heart, lungs, nor liver present—*Medical Times and Gazette*, vol. i, 1863, p. 572. Harvey, diagram—*Lancet*, vol. ii, 1848, p. 696. Spinal cord also absent. Nicholls—*Lancet*, vol. ii, 1857, p. 202. Spinal cord absent alone. Smith—*Lancet*, vol. ii, 1848, p. 400.

THE IMPORTANCE OF A KNOWLEDGE OF DISEASES OF THE EAR TO THE STUDENT AND GENERAL PRACTITIONER OF MEDICINE.

BY THOMAS BARR, M.D.,

Aural Surgeon to the Glasgow Western Infirmary ; Lecturer on Aural Surgery, Anderson's College, Glasgow.

GENTLEMEN,—Until recently, there was probably no part of the body the diseases of which received so little attention,

from the student or practitioner of medicine, as the organ of hearing. It is now, however, becoming more apparent to medical men that diseases of the ear demand the most careful study and investigation, not only because they are of frequent occurrence, but also because their consequences are often very serious, affecting the comfort of the patient, his social relations, his success in business, his intellectual development, and even the duration of his life. This increasing interest in the subject has gradually led to the institution of aural lecture-ships and cliniques in most of our hospitals and medical schools, in order that the rising generation of medical men may acquire some knowledge of this hitherto much neglected part of the body.

I think, gentlemen, the aim of every medical school should be to furnish facilities to the student of medicine for the practical study of the diseases of every region of the body, within the one general hospital. It is not my intention to discuss the value of the special dispensaries or hospitals which form a prominent feature in the charities of a large city. I shall only say that the more fully a general hospital like this is equipped for the treatment of all forms of disease, the less justification will there be for the establishment of these special institutions. Of course, patients suffering from infectious diseases, or persons afflicted with insanity, must necessarily be treated in hospitals set apart for the purpose, while a practical knowledge of midwifery must be gained chiefly in the homes of patients, or in a special institution. But, with these exceptions, the ideal of an hospital, which is also intended to be a training school for medical men, demands that no student shall be under the necessity of seeking beyond its precincts for a thorough acquaintance with any particular department of medical science. There never was greater need for conserving the energy, and economising the time, of the medical student than there is at present, when, in the short space of four years, he is expected to attain a more or less intimate knowledge of fully twelve subjects, each of which might occupy a lifetime in its thorough mastery. Every hour of his day is fully occupied, and he has no time to waste in travelling to distant parts of the city in search of experience and information, which might be, and ought to be, provided in such institutions as the Western Infirmary.

A further practical recognition, in this place, of the import-ance of ear diseases is most desirable, perhaps absolutely necessary. For the satisfactory treatment of purulent inflam-

mation of the tympanum and mastoid cells, total rest for the patient, as well as daily supervision and operative treatment by the surgeon, are frequently required. Such a state of the ear is fraught with more peril to life than many of the diseases that are constantly being treated in the wards of the Infirmary. Thorough treatment, under the favourable conditions established in our wards, would frequently be successful, if patients were only able to take advantage of it before it is too late to try to remedy the evil. I need not say that when an abscess has formed in the brain, or when purulent infection of the blood has taken place, the time for effective treatment is past. In seven cases of purulent ear disease, terminating fatally, which have come under my notice, no aural treatment worthy of the name had been attempted. This is just the place where such treatment could, and should be applied. We might save valuable lives ; and our knowledge of this department of medicine would be greatly advanced, since the treatment of such cases in the wards of the Infirmary would allow closer and more systematic observation of the symptoms and course of ear diseases, than we have hitherto had an opportunity of making. It is on these grounds that I trust our directors will soon be enabled, by the liberality of a generous public, more freely extended in a day of returning commercial prosperity, to add to our dispensary department a few beds for the special treatment of the more serious diseases of the ear.

It is very desirable that the specialist, who gives his attention to any particular region of the body, should conduct his public clinique in a large general hospital such as this. Here he enjoys the opportunity, and faces the responsibility of teaching what he himself has learned. The presence of the students has a wholesome and stimulating influence upon the teacher, while there is nothing that more powerfully conduces to clearness and thoroughness in any branch of knowledge than the habitual and systematic effort to communicate instruction to others. All the more gladly, where a branch of the healing art has been comparatively neglected or despised, will the teacher welcome the privilege of commending it to those who are about to join the . ranks of the medical profession. By teaching the subject to the future practitioners of medicine, by winning their attention to what is in itself a deeply interesting study, by exciting their enthusiasm at the account of what has already been achieved by earnest labourers in the same field, and by convincing them of the importance of a general knowledge of the subject in the daily practice of

every physician, he may hope very soon to raise the subject to the place it ought to hold in the estimation of the whole medical profession and of the general public.

I am sure, gentlemen, that when you enter on the responsibilities of practice, you will find a knowledge of the diseases of the ear of greater service than at first you may be inclined to believe. Allow me, then, after these preliminary remarks, to lay before you, by way of introduction to the actual work of the course, some reasons that should lead you in your medical curriculum to bestow a share of your attention on this branch of the healing art.

First,—Diseases of the ear are worthy of your consideration because they are so very prevalent. Unfortunately, their frequency is often underestimated, because there is probably no other part of the body where disease so often exists uncared for by the patient, and unknown to the ordinary medical attendant. Sometimes, indeed, it is only an accidental circumstance that reveals the fact of the existence of defective hearing to the sufferer himself or to his friends. A patient frequently consults me in consequence of a deafness which he believes has been only of a few days' duration. On careful enquiry, however, I may discover that one ear has been closed to sound for many years. Little inconvenience was felt, till perhaps catarrh of the Eustachian tube or of the tympanum has dulled the hearing of his other ear, reducing him to a state of almost total deafness. Alarm now has brought him for advice, and the recent affection of the one ear has led to the discovery that the other ear has long been practically useless. It is especially among the lower classes of the community that considerable impairment of the function of hearing may exist without interfering in any marked degree with their work, or with their intercourse one with another, and it is long before it is a matter sufficiently serious, in their estimation, to require medical help. Even purulent discharges from the ear, unattended as they often are by pain or by any considerable defect of hearing, are often looked upon as a trivial matter, unworthy of being mentioned to a doctor, so that the family medical attendant is seldom made aware of their existence. If only the parts affected were exposed to view, if the changes which the pathological processes are gradually making upon the structures of the deeper parts of the ear were observed by the patient himself, and if he knew any of the dangerous consequences not unfrequently developed out of purulent diseases of the ear, many more cases of ear disease would come under the notice of medical men, just because there

would be a greater anxiety on the part of every patient so suffering to find a cure.

If you ask what explanation is to be given of this prevalence of ear disease, I have only, in the meantime, to remind you how often the ear is implicated in general diseases of the body that are of every day occurrence. In measles, scarlet fever, and small-pox, in mumps and hooping-cough, in typhus fever and tuberculosis, aural complications are frequent and often formidable. Again, syphilitic and scrofulous diseases not unfrequently involve the ear in the most serious morbid changes, while even such common ailments as coryza and catarrhal pharyngitis are often associated with some disturbance of the organ of hearing. In childhood few escape without some inflammatory attack in the ear, resulting, it may be, in a sleepless night of pain ; and von Tröltsch asserts that, in middle life, one person in every three has some aural ailment in at least one ear, and that few persons above the age of 50 have the sense of hearing unimpaired. On account of their *frequency*, then, I would ask you to devote a portion of your time to the study of the diseases of the ear.

Second,—Such diseases are worthy of your attention, not only because they are so common, but also because their accompaniments and consequences are often so serious. The result of ear disease is not unfrequently total loss of hearing, and that is a calamity too dreadful to be at once fully realised. Without attempting to discuss the question whether blindness or deafness is the greater misfortune, this at least I may say without danger of contradiction—that the loss of hearing has a more isolating influence on the mind of the sufferer than the loss of sight. The deaf are cut off from that ready intercourse of mind with mind which is the highest moral and intellectual training that the world affords. They are deprived of the enjoyments of social intercourse, the delights of music, and the charms of eloquence—a terrible fate which never can overtake the blind. Surely Beethoven, deaf to sound, was a more miserable man than Milton, bereft of sight. Think, again, how serious is the loss entailed on a child by total deafness or very defective hearing. Childhood is the most receptive period of life, and it is by the exercise of the sense of hearing that, in the second and third years of life, language is acquired, which is certainly the most powerful instrument employed in the education of a child. If hearing is lost before the age of 8 years, the power of speech is also lost—the child is reduced to the condition of a deaf mute, and his mental development is rudely checked at the very time

when the most important elements of knowledge ought to be acquired—the period of greatest mental growth and progress.

But the influence of even a partial loss of hearing upon a person's position and prospects may be very damaging, especially in the case of the cultured and refined, with wider opportunities for usefulness, and keener sensibilities to mourn the loss of these. One suffering from defective hearing will find himself entirely excluded from some congenial occupation in which he would otherwise engage with zeal; and this infirmity is sure to mar his pleasure and hinder his progress in almost any work on which he may be able to enter. A man at his trade or in his profession, and a woman in her family, are certain to be terribly and continually tormented if they are unfortunate enough to be even only partially deaf.

Then we must remember that the inconvenient effects of dulness of hearing are not confined to the person afflicted with it; his friends, and especially those of the same household, have necessarily to suffer a great deal of annoyance. The frequent repetition of, it may be, some delicate communication in tones progressively increasing in loudness, is a trial which puts the patience to the severest test, and which only the strength of close friendly attachment, or the exigencies of important business, will enable us to stand. He, then, who cures deafness, or an ear disease that may lead to it, benefits not merely the patient himself, but the whole circle of his acquaintances.

I have spoken of the pain and inconvenience caused by total or partial loss of hearing; but we must next observe that, by a strange irony of nature, while the vibrations of air from without cannot reach the acoustic nerve, or if they do reach it, cannot stimulate that nerve to the perception of sound, the patient may, at the same time, be tormented by the most intolerable noises within the head. This "tinnitus aurium," as it is technically called, is a very frequent attendant upon certain forms of deafness, and is in many cases a much more serious cause of complaint than even the difficulty of hearing. The inconveniences of defective hearing may sometimes be obviated by quickness of vision on the part of the patient, or by his use of such artificial helps as the hearing trumpet or audiphone; and, besides, the power of hearing does not need to be constantly exercised, but the peculiarly painful feature of these subjective sounds is that there is often no interval of relief; they are distressingly painful when present—and they

are often continually present with the patient—disturbing the current of his thoughts, and hindering the performance of his duties by day, while they prevent or break in upon his sleep at night. There are cases on record in which the sufferer sought relief from such misery in self-destruction.

But now passing from these painful phenomena confined to the organ of hearing, I must draw your attention to certain conditions threatening life itself, which may be developed out of particular forms of aural disease, and especially out of those attended by purulent discharge from the ear. Those of your number whose hospital experience has been somewhat extensive, may have seen fatal disease of the brain, or of the meninges, or pyæmia, arising from suppurative diseases of the ear. When we come to consider the whole subject in detail, you will better understand how ready a means for the extension of inflammatory disease is provided by the peculiar position and relations of the interior of the ear, and how peculiarly the structure of the temporal bone is fitted to aid in the accumulation and further decomposition of purulent matter, which may be absorbed into the general circulation of the blood. Without giving you more definite statistics, it is enough for me to say that it has been calculated that half the cases of cerebral abscess have an aural origin, while the literature of the subject contains accounts of many cases of fatal purulent absorption, of the formation of thrombi in the vessels, of metastatic abscesses in the joints, lungs, and other parts of the body, all of which have sprung out of chronic suppurations in the ear. Besides, there can be no doubt that death has not unfrequently been the result of such morbid conditions of the ear, in cases where the existence of the otorrhœa has not been mentioned to the physician, or when both patient and practitioner were ignorant of the dangers so often attendant upon a "running ear." Life assurance companies are beginning to look on this purulent condition of the ear as a matter of some importance in the calculation of the probable duration of life, and the time will soon come when every form of proposal issued to intending insurers will contain the question, "Is there any discharge of matter from the ear?"

There are other phenomena of a very alarming character, such as vertigo or giddiness, which are often witnessed in the course of aural disease. Vertigo may be produced by so slight a cause as the pressure of cerumen upon the tympanic membrane, while on the other hand it may be the result of serious disease of the labyrinth, especially of the semicircular canals.

Again, epileptic convulsions, persistent vomiting, cough, and even insanity have been known to owe their exciting cause to an irritation in some part of the ear. The ear is richly supplied with branches of the trigeminus and pneumo-gastric nerves, and both having wide reflex connections, we might anticipate that if they are subjected to irritation from a pathological or other cause, evil results will follow, manifested, it may be, in parts of the body remote from the ear. Many writers, both at home and abroad, such as Arnold, Wilde, Schwartze, and Köppe, have described cases of vertigo, epilepsy, or insanity, undoubtedly due to such causes as the presence of a foreign body in the ear, the existence there of a piece of necrosed bone, or of disease of the mastoid. Even as far back as 1646, Fabricius Hildanus describes the case of a girl, seven years of age, who had a glass ball, of the size of a large pea, pushed into her left ear, which baffled all efforts made to remove it. She was seized with violent pain, alternating with anæsthesia of the left side of the head, followed after some time by epileptic convulsions, while atrophy of the left arm supervened. The girl, after the first efforts to remove the glass ball, never complained of pain in the ear, so that the physicians, subsequently consulted by her, never suspected that that organ was connected with her sufferings till in her eighteenth year, eleven years after the foreign body had been thrust into the ear, the girl was brought to Fabricius, who accidentally heard of the ball. He examined the ear, found the ball, and extracted it, with the result that the patient recovered, and thereafter enjoyed perfect health. Again, Schwartze and Köppe, in Germany, relate two very interesting cases of epilepsy, due to aural disease, which were cured by the successful treatment of the aural affection, while the latter narrates two cases of reflex insanity, due to peripheral irritation in the ear.

Third,—Having placed before you the frequent occurrence and the serious accompaniments and consequences of aural disease, as reasons why you should devote part of your time to this branch of medical study, I now intend, as an additional incentive and encouragement, to draw your attention to the increased interest taken in ear diseases by the profession generally, which is due to the invention of new appliances for the investigation and cure of ear diseases, and to the beneficial results attained by the use of these appliances. Until recently, the greater number of medical practitioners had little opportunity of attaining any knowledge of this subject; instruction on the subject of aural disease in our medical schools and

hospitals was conspicuous by its absence, and any knowledge of it was confined to a few specialists, whose only desire in some cases was to retain exclusive possession of the field, and to discourage other professional inquiry, lest their occupation, like Othello's, should be gone. The natural consequence of this neglect was that the subject, being little understood by the profession at large, was as little esteemed ; it was looked upon as the *bête noire* of medical science ; great scepticism prevailed regarding the real value of any definite treatment, and yet the most crude and sometimes mischievous remedies were practised. Purely empirical treatment prevailed, and remedial measures were constantly resorted to without any knowledge of the nature of the disease, or of the condition of the organ.

Let me picture to you the state of matters in the past, which unfortunately is not yet altogether in the past. A pain in the ear, due to inflammation, is treated by large quantities of quinine, on the supposition that it is neuralgia ; a foreign body is vigorously searched for by various kinds of forceps, when there is no foreign substance in the ear ; polypi are diagnosed when there is not even suppuration ; long continued and repeated syringing is employed when there is nothing to wash away—all because the physician is not able to examine the interior of the ear in an intelligent or scientific manner. A patient from a distant part of the country lately came to consult me regarding deafness and a severe pain in his ear. The auricle and neighbouring parts of the head were reddened, vesicated, much swollen, and very tender — the results of repeated application of Emplast. Cantharidis, which had been ordered by the family attendant for the relief of the malady. A short examination, by means of the ordinary implements for illuminating the canal of the ear, divulged the cause of the trouble—the external auditory canal was tightly plugged with a mixture of cerumen, epidermis, and dust from the atmosphere, on the removal of which, by a few well directed streams of warm water, the patient's sufferings were at once relieved, his hearing restored, and the healing of the external parts alone was needed in order to complete his comfort. Not unfrequently patients present themselves to me whose ears have been diligently probed and roughly manipulated by several medical men in search of a pea, a bead, or some such substance, which the patient asserts has got into it. After the most careful inspection, however, I find nothing but blood marks caused by the various instruments introduced in search of an imaginary foreign body.

A very instructive and curious case is related by von Tröltsch, which shows the importance of the intelligent examination of the ear, while it also demonstrates the occasional origin of giddiness already referred to. An old man, on coming out of a wine shop one evening, where he had imbibed pretty heartily, fell over the pole of a waggon placed in the way, and, in falling, struck the pavement violently with his head. He thought he lay unconscious for about a quarter of an hour, but he did not know the relative share of blame to be assigned to the fall on the head and to the various liquors in producing this unconsciousness. He got up, however, and reached his home in safety. After a somewhat disturbed night, he and his friends were alarmed to find that he was suffering from almost complete deafness on both sides, as well as from severe giddiness. The physician who was called in shook his head, and, like the patient, could explain the giddiness and the sudden deafness only by the striking of the head on the stony pavement. He pointed out to the family the serious nature of the case, and declared that there was at least concussion of the brain, and perhaps an effusion of blood on the brain. The patient was put upon light diet, was cupped and purged, and, after a few days, a seton was inserted in the neck. The deafness remained as before, the vertigo continued in a fluctuating degree, and the patient became depressed in mind and weak in body. After some months he happened to come under the notice of von Tröltsch, who, after hearing the story of his affliction, examined the ear and found *both canals completely stopped up with cerumen.* It was softened and easily removed by syringing. Immediately he was cured, not only of his deafness and giddiness, but also of a deep feeling of sadness, which had lasted since his "*concussion of the brain.*" In this man's case, the fall on the head had brought the plug of cerumen, which had existed before, into a position which completely closed the canal of the ears, and subjected the membrane to pressure, and thus produced the sudden deafness and giddiness. "Remember this man," said von Tröltsch to his students, "when a case comes before you presenting phenomena which might be referred to the ear, and try to sympathise with the patient who had been so long tormented with giddiness, deafness, and prostration of mind; try also to realise the dismay of the otherwise very able practitioner, when made aware of the true nature of the *brain affection.*"

Such cases as I have brought before you illustrate the fact that the most beneficial results may follow an intelligent use of the

syringe. We have still to complain, however, that, in general practice, the syringe is used in the most empirical fashion, and that mainly because the physician is even yet unable to illuminate and examine the interior of the ear. Instead of being used to remove cerumen, purulent matter, or some foreign substance from the ear, it is frequently employed as a diagnostic expedient to ascertain if anything is in the passage of the ear, or to diagnose perforation of the membrane by asking the patient if the water has passed into the throat! We sometimes hear patients earnestly asserting that, although the ear has been many times syringed by their medical attendant, yet, evidently to their astonishment, nothing has been got out. It is surely time, gentlemen, that such unscientific procedure should come to an end, both in the interests of the profession and for the welfare of the public.

The appliances now in use for illuminating and examining the external canal of the ear and the tympanic membrane are so simple and so complete that it is blameworthy in the extreme for any medical practitioner to remain in ignorance of them. Furnished with a proper ear speculum and concave mirror, and practised in their use, you may, in all kinds of weather, by artificial or day light, obtain a perfect knowledge of the condition of the internal parts of the ear; while, by the use of the auscultation tube and the Eustachian catheter, or Politzer's bag, you may obtain an accurate idea of the permeability of the Eustachian passages, as well as information with respect to the presence or absence of fluid in the tympanic cavity. Indeed, we have now diagnostic appliances as efficient for investigating the state of the ear as those used to inquire into the state of any other organ of the body.

The *therapeutics* of ear affections have also made very satisfactory progress in recent years. This is undoubtedly due to improved means of examination, and the consequent increase in our knowledge of the pathology of the organ, which is the true basis of all really scientific treatment. A certain proportion of diseases of the ear are quite incurable, a statement which, unfortunately, must be made of the diseases which attack any other organ of the body. Many aural affections are capable of but slight improvement. A very considerable number, however, may be decidedly improved, while a very fair proportion can be completely cured. To those cases in which the treatment generally secures complete restoration of the function of the organ belong most of the affections of the external canal, the acute and

sub-acute catarrhs of the middle ear, and acute inflammation of the same part. In chronic suppurative inflammation of the middle ear, which is the condition usually present in the ordinary "running ear," much benefit is usually derived from judicious treatment, although, of course, we cannot expect complete restoration of any organ after serious organic changes in the structure of its tissues have taken place. In cases of chronic non-purulent catarrh, or of sclerosis of the middle ear, forming, it must be admitted, a very large number of the cases which come before us, especially in a hospital clinique, we can seldom expect anything like a cure. The prospect brightens again, however, when we consider that this is just the class of cases which we may expect will diminish in number when every physician is possessed of sufficient knowledge to enable him to use efficient treatment at an early stage of the disease. We may sum up by asserting that the scientific treatment of aural diseases will produce beneficial results which will bear comparison with those following the treatment of any other part of the body.

I must now, gentlemen, leave it for you to decide whether or not it is reasonable to expect that, for the sake of your success in practice, for the welfare of your patients, for the reputation of our profession, as well as for the future progress of aural surgery, you should give some attention to the study of diseases of the ear. In my opinion it is very desirable that this branch of medicine should no longer be confined to the narrow limits of a specialty. The general practitioner should be in a position to examine the interior of the ear just as he auscultates the chest, feels the pulse, or examines the pupil. As we have seen, many phenomena in distant parts of the body arise from reflex sympathy with the highly vascular and nervous organ of hearing, and the ordinary physician is much more likely to meet with and elucidate such cases than the mere specialist is. Besides, many valuable opportunities must present themselves, in general practice, for observing ear diseases at an early stage and checking their further progress. For these and other reasons I think it is high time for the student of medicine to claim and obtain all the knowledge that has been gathered on the subject. Jonathan Hutchison says :—" In the early stage of any department of knowledge, it is almost a matter of necessity that it should be in the hands of a few. But it is the highest privilege of those who devote themselves to the reclaiming of new spots of territory to hand them over to the commonwealth to prove that they are now cultivated and worthy of annexation."

CURRENT TOPICS.

OUR PROGRAMME FOR 1881.

IN issuing the first Number for the year 1881, we are able to present to our readers the names of an unusually large number of gentlemen who have promised to send contributions during the year. Some of these have been able to indicate subjects, while others, although they have some communications thought over, are not able to commit themselves to a special designation. The following is the list of names referred to :—

JAS. A. ADAMS, M.D., Demonstrator of Anatomy in the University of Glasgow. *Abscess of the Brain from Aural Disease.*

M'CALL ANDERSON, M.D., Professor of Clinical Medicine in the University of Glasgow, *Lectures on Clinical Medicine.*

J. WALLACE ANDERSON, M.D., Assistant Physician Accoucheur to the Glasgow Maternity Hospital.

JOHN BARLOW, M.D., Professor of Physiology in Anderson's College.

THOMAS BARR, M.D., Aural Surgeon to the Western Infirmary, Glasgow. *Papers on Aural Surgery.*

GEORGE T. BEATSON, B.A., M.D., Surgeon to the Glasgow Training Home for Nurses.

GEORGE BUCHANAN, M.D., Professor of Clinical Surgery in the University of Glasgow. *Reports and Cases in Clinical Surgery.*

H. C. CAMERON, M.D., Surgeon and Lecturer on Surgery, Glasgow Royal Infirmary. *Address on Some Medical Complications of Surgical Diseases.*

J. P. CASSELLS, M.D., Surgeon to the Glasgow Hospital and Dispensary for Diseases of the Ear. *Papers on Practical Aural Surgery, and Clinical Reports from the Hospital and Dispensary, the latter jointly with the Clinical Assistants.*

MATTHEW CHARTERIS, M.D., Professor of Materia Medica in the University of Glasgow.

JAS. CHRISTIE, M.D., Lecturer on Hygiene and Public Health, Anderson's College. *Papers on Dengue.*

H. E. CLARK, M.R.C.S.E., Surgeon to the Glasgow Eye Infirmary.

JOHN CLELAND, M.D., Professor of Anatomy in the University of Glasgow.

JOSEPH COATS, M.D., Pathologist and Lecturer on Pathology Western Infirmary, Glasgow.

JOHN DOUGALL, M.D., Lecturer on Materia Medica, Glasgow Royal Infirmary School of Medicine.

JAS. DUNLOP, M.D., Professor of Surgery in Anderson's College.

JAS. FINLAYSON, M.D., Physician and Lecturer on Clinical Medicine in the Western Infirmary, Glasgow. *Notes of Cases of Nervous Disease.*

W. J. FLEMING, M.D., Lecturer on Physiology in the Glasgow Royal Infirmary School of Medicine. *An Estimation of the amount to which Inspired Air is Heated before it reaches the Bronchi.*

DAVID FOULIS, M.D., Pathologist and Lecturer on Pathology, Glasgow Royal Infirmary.

DONALD FRASER, M.D., Physician to Riccartsbar Asylum, Paisley. *Paper on Writer's Cramp, &c.*

W. T. GAIRDNER, M.D., Professor of Practice of Medicine in the University of Glasgow. *Paper on Crepitant Râles.*

SAMSON GEMMELL, M.D., Professor of Practice of Medicine in Anderson's College.

ROBERT KIRK, M.D., Physician Accoucheur, Western Infirmary, Glasgow.

ROBERT KIRK, M.D., Glasgow.

D. N. KNOX, M.D., Dispensary Physician, Western Infirmary, Glasgow.

WM. MACEWEN, M.D., Surgeon and Lecturer on Clinical Surgery, Glasgow Royal Infirmary.

JOHNSTONE MACFIE, M.D., Aural Surgeon, Glasgow Royal Infirmary. *Papers on Diseases and Injuries of the Ear.*

G. H. B. MACLEOD, M.D., Professor of Surgery in the University of Glasgow. *Papers on Practical Surgery.*

DONALD M'PHAIL, M.B., Assistant to the Professor of Surgery in the University of Glasgow.

D. C. M'VAIL, M.B., Dispensary Physician, Western Infirmary, Glasgow.

T. S. MEIGHAN, M.D., Surgeon to the Glasgow Eye Infirmary.

GEO. S. MIDDLETON, M.B., Assistant to the Professor of Medicine in the University of Glasgow.

HUGH MILLER, M.D., Physician Accoucheur, Glasgow Maternity Hospital. *Paper on the Clinical Cases at the Maternity Hospital.*

ALEXANDER NAPIER, M.D., Assistant to the Professor of Materia Medica in the University of Glasgow. *Periscope of Dermatology, &c.*

DAVID NEWMAN, M.B., Pathological Chemist, Western Infirmary. *Description of an Apparatus for estimating the Colouring Matter in Blood and Urine.*

ROBERT PERRY, M.D., Physician and Lecturer on Clinical Medicine, Glasgow Royal Infirmary.

THOMAS REID, M.D., Surgeon to the Glasgow Eye Infirmary. *Papers on Diseases of the Eye.*

W. L. REID, M.D., Physician Accoucheur to the Western Infirmary. *Papers on Diseases of Women.*

J. C. RENTON, M.D., Extra Dispensary Physician, Western Infirmary. *Note on the Treatment of Clubfoot, &c.*

ALEX. ROBERTSON, M.D., Physician to the Town's Hospital and City Parochial Asylum, Glasgow. *Papers on the Diseases of the Nervous System.*

SAMUEL SLOAN, M.D., Physician Accoucheur, Glasgow Maternity Hospital.

A. TURNBULL SMITH, M.B. *On the Pathological Relations of Tubercle, Struma, and Phthisis Pulmonalis.*

A. WOOD SMITH, M.D., Physician and Lecturer on Practice of Medicine, Glasgow Royal Infirmary.

WILLIAM SNEDDON, M.D., Beith.

JAMES STIRTON, M.D., Lecturer on Midwifery, Glasgow Royal Infirmary. *A Series of Cases of Extra-uterine Pregnancy, illustrative of treatment.*

ABRAHAM WALLACE, M.D., Physician for Diseases of Women and Children, Anderson's College Dispensary. *Papers on Gynæcology and Obstetrics.*

EBEN. WATSON, M.D., Surgeon and Lecturer on Clinical Surgery in Glasgow Royal Infirmary. *Paper on a Subject in Practical Surgery.*

J. G. WILSON, M.D., Physician Accoucheur, Glasgow Maternity Hospital. *Report of Obstetric Cases, with Remarks.*

DAVID YELLOWLEES, M.D., Physician to the Royal Asylum, Gartnavel.

THE Council of the Royal Society have awarded to Professor Lister a gold medal for his "Researches in Surgery," being the highest distinction which this, the most distinguished Society in the kingdom, have it in their power to confer for original research. We believe that it is fourteen years since this honour was conferred on a member of the medical profession.

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ANÆSTHETICS.*—Although it is not our custom to refer at length to articles appearing in our weekly contemporaries, the number of the *British Medical Journal* of December 18th of last year deserves more than a passing notice. It publishes, in the first place, the full report of the British Medical Association Committee on Anæsthetics, which must mark an epoch in the history of the artificial production of insensibility to pain, and which is of peculiar interest to us, as showing the high position Glasgow is now taking as a school of original medical research; and besides this, the same *Journal* contains a set of tables prepared by Mr. Burton of Liverpool and Dr. Jacob of Leeds, recording all the published deaths from chloroform, ether, and dichloride of methylene, in the United Kingdom, during the eleven years, 1870-1880. Two papers, which may well be read each by the light of the other. The Glasgow Committee, as it has been called, consisted of Drs. M'Kendrick, Coats, and Ramsay, the latter gentleman's place, on his leaving Glasgow, being taken by Dr. D. Newman. They were appointed at the meeting of the British Medical Association, in Manchester, 1877, "to investigate the action of anæsthetics," and have been aided by grants from the Scientific Committee of the Association. They have also had at their disposal the admirably provided Physiological Laboratory of the University. The questions, to the investigation of which they specially devoted themselves, were—(1.) "Wherein the special dangers of chloroform consist." (2.) "Whether some anæsthetic agent could be found which would avoid these dangers."

An extensive series of preliminary experiments, with no fewer than 14 substances, showed clearly that only ether, chloroform, and ethidene dichloride, were deserving of further investigation. The latter compound $(C_2H_4Cl_2)$ was first employed by Dr. Snow, before 1858, has since found considerable favour on the Continent, and has been largely used by Mr. J. T. Clover in this country.

* As one of the Committee referred to in such flattering terms in this article, the Editor feels called upon to explain that the article came into his hands without solicitation on his part.

The experiments with these agents were first an investigation, by slight modifications of the usual methods, of their effect upon the gases of the blood, the air breathed, and the nervous phenomena; but the laborious nature of these researches prevents the reporters from describing their results at length. This, we understand, they hope to do at a later date. However, as having less practical bearing, this portion of the investigation can better afford to be delayed. The questions most fully investigated have been the effects of anæsthetics on respiration and circulation, and the general plan of the research consisted in :—

(1.) First, careful observations of the phenomena produced by their administration, in the usual way, to animals, and, in the cases of chloroform and ethidene, to patients in the Western Infirmary.

(2.) The consideration of their effect upon the heart, in animals, after their action on respiration had been eliminated by its careful artificial maintenance.

(3.) Their effect upon the blood pressure as measured both by the mercurial manometer and by a spring kymo graphion.

(4.) The effect on the circulation in the lung, necessarily investigated in frogs. For this last experiment an ingenious arrangement was devised, by which artificial respiration could be kept up in these animals after the chest had been opened, and definite quantities of air or anæsthetic vapour administered.

Wherever applicable, the graphic method has been employed, and the tracings given in the paper add much to its value.

The results obtained by each of these sets of observations are singularly confirmatory of each other, and must be shortly summarised :—

In the observations on animals it was found that death from all the three anæsthetics, in a great majority of cases at least, arose from paralysis of respiration; but "that even when this was more directly the cause of death, the heart was, to some extent, simultaneously affected, and there were even cases in which the heart appeared to fail as soon as, if not before, the breathing."

In the observations on man, with ethidene and chloroform, great general similarity of action of the two substances appears; but the two pulse and respiration charts given show that, in some cases, marked discrepancy in the action of the two agents existed. This discrepancy is of great

interest as confirming the experimental results to be detailed afterwards. On looking at these charts, we at once see that, with chloroform, we have a great, indeed extreme rise of respiratory rate, with a very considerable fall in pulse rate; whereas, with ethidene, the increase in the number of respirations is comparatively slight, while the pulse rate is, upon the whole, fairly maintained. It is much to be regretted that a similar set of observations on ether anæsthesia have not been obtained; but we will have to refer to this later.

The second class of experiments were simply the carrying out, with more completeness and more perfect appliances, the one mentioned by Mr. Lister in his article on Anæsthetics in Holme's *System* (Vol. v, p. 485, 2nd edition), and consisted of the direct observation of the heart, during anæsthesia, with artificial respiration.

The interest of these experiments centres in the different results afforded by chloroform and ether respectively. Shortly put, chloroform very rapidly paralyses the heart. *Ether does not paralyse it at all.*

The experiments upon blood pressure are very complete, and a model of physiological research. They show clearly that the blood pressure during the administration of chloroform is always diminished, and that, not regularly, but, as it were, spasmodically, and, so far as we can judge, arbitrarily, while the respiratory curves are diminished or extinguished, and also that this fall of blood pressure may suddenly supervene a considerable time after the cessation of the administration of the drug.

With ethidene, practically the same effects are produced, but less markedly; especially is the effect upon the respiratory curves less distinct.

With ether, on the other hand, no diminution of blood pressure occurs, and, if anything, the respiratory curves are accentuated.

The Committee, by an ingenious arrangement, have succeeded in studying the effects on the pulmonary circulation produced by the anæsthetics, and find that they all ultimately produce stoppage of the capillary circulation, but so different is the time taken, and the amount required in the case of the several agents, that the difference in their action is more completely displayed in this than perhaps in any of the other experiments. It is clearly and shortly shown in the following table :—

	Chloroform.	Ethidene.	Ether.
1. Time required to produce complete stoppage of pulmonary circulation,.........	75 seconds.	180 seconds.	270 seconds.
2. Amount of anæsthetic vapour employed,...............	50 c.c.	250 c.c.	500 c.c.
3. The quantity of air necessary to re-establish circulation in lung,...............	600 c.c.	250 c.c.	200 c.c.
4. Time occupied in restoring the circulation,...............	720 seconds.	240 seconds.	180 seconds.
5. Heart's impulses before artificial respiration,......	18	23	24
6. Heart's impulses when cirlation has stopped,.........	4	7	6½

Coincidently with those effects on the pulmonary circulation, and more probably their cause than their effect, considerable alterations in the structure of the capillaries and of the blood corpuscles were observed.

The result of these observations naturally led to a more minute study of the actual changes in the action of the heart, and, by a series of comparative tracings, it is clearly shown that paralysis of the ventricles precedes that of the auricles when the anæsthesia has been pushed to the point of interference with cardiac action. This, along with the observation that section of the vagi had comparatively little effect on the blood pressure, points to the influence being exerted rather on the intrinsic ganglia than upon the central nervous system.

The result of these experiments and observations seems to be that each of the three anæsthetics employed will, if pushed far enough, abolish respiration and cardiac action—the respiration generally failing first, and this failure being due to a direct action on the nervous centres. The cardiac arrest is probably brought about partly by the increased resistance to the action of the right ventricle arising from the changes in the lung capillaries, and partly to the direct action of the anæsthetic upon the intrinsic nervous apparatus of the heart itself.

Although these results are all produced by each of the three anæsthetics, the dose of each required is very different—a very small dose of chloroform sufficing, while with ethidene a somewhat larger one must be employed, and with ether a comparatively enormous one. Besides this difference, ether

displays a disproportionately small action in arresting the
cardiac compared with the respiratory functions.

Let us now turn from this side of the question and take
advantage of the statistics given in the same *Journal*, (p. 997,
et. seq.)   Here we have the record of 120 deaths from chloro-
form, 11 from ether, and 10 from methylene dichloride.   We
omit the seven mixed anæsthetic cases given.   Unfortunately,
some of the cases are so deficient in detail that it is impossible
to derive much information from them, and, of course, without
any data as to the relative frequency of the administration of
each agent, comparison of the mortality is impossible ; but, in
these tables, we find 66 cases in which it is more or less
distinctly stated whether the respiration or circulation ceased
first.   In 55 of these the circulation is asserted to have failed
first, in 11 the respiration.   Out of the 11 ether deaths, only
5 can be fairly compared with the above, and in only one of
these is it stated " pulse stopped," and in this instance *post-
mortem* examination showed " Heart healthy—œdema of
lungs—extensive pleural adhesions."   In the methylene table
there are 8 cases available for comparison, of which 7 are
distinctly stated as *syncope, one only* asphyxia.

We have thus *four-fifths* of the chloroform cases, *one-fifth*
of the ether, and *seven-eighths* of the methylene cases, dying
from cardiac arrest.

What, then, are the practical bearings of all this?   Obviously
that ether is incomparably the safest anæsthetic we possess.
It is acknowledged by all members of the profession that
heart syncope is the great cause of dread in the administration
of anæsthetics, whatever their opinions may be as to the
necessary previous occurrence or not of respiratory trouble.
Respiratory failure can be combated, and generally with
success.   Cardiac failure is practically beyond the reach of
remedy.   Hence the advice, given on great authority, " not to
mind the pulse," is replete with danger.   One point seems to
be shadowed forth in the report, and we trust will be worked
out soon—namely, the relative effect of the different anæs-
thetics upon the quantity of air taken into the lungs at each
inspiration.   No one accustomed to see chloroform adminis-
tered can have failed to notice the frequency of shallow
breathing.   With ether this rarely or never is present.   The
effect of the two anæsthetics upon the respiratory curves in the
kymograph tracings shows this plainly, and the demonstration
of the absolute quantity of air required to produce recovery,

in the experiments on the lung of the frog, emphasises the practical value of this element in the question. It may well be asked, then, why, in the face of all these facts, surgeons still use chloroform? We cannot answer, but we may give some of the reasons they allege in support, we had almost said extenuation, of the practice. It is said that ether is more expensive. That the smell is more offensive both to the surgeon and the patient, and more persistent. That it produces more excitement; and, most important of all, that it takes a long time to produce insensibility. The first three of these reasons are trifling, when we have to deal with the question of greater safety. The last is founded entirely on faulty administration. The writer has given ether almost exclusively for about six years, and since learning how to give it, and what ether to give, has never once taken ten minutes to completely anæsthetise a patient. In fact, as a rule, it produces anæsthesia *more rapidly* than chloroform. However, it must not be given as chloroform is, but at first in a large and concentrated dose.

This able report will, we trust, do much to re-introduce the use of ether into surgical practice in Britain. It seems to us that no thinking man can read it without being convinced that ether is the nearest approach we possess to a safe anæsthetic. It has often been pointed out that anæsthesia, no matter how produced, can never be absolutely free from danger; but it is our duty to take from it every risk which our knowledge enables us to guard against. And we believe this report will take its place as perhaps the most valuable contribution to that knowledge which has been made at one time since the introduction of surgical anæsthesia. The report concludes with a programme of further study, which is admirable in itself, but seems to us rather to pass from the practical questions waiting solution. We have above suggested an attempt to measure the relative amount of air inspired under different anæsthetics, and would also like to hear of some investigations as to the effect of previous medication, especially with chloral, opium, and atropine, upon the anæsthetic action of the various drugs, with perhaps some account of the restorative effects of others, such as nitrite of amyl, in cases where dangerous symptoms are present. Taken as a whole, we must congratulate the Committee on the valuable outcome of their onerous task, and the admirable manner in which it has been accomplished, and the British Medical Association upon the selection of men so well qualified to perform it.—W. J. F.

New Therapeutical Preparations. — We have been favoured, by Messrs. Burroughs & Co., with samples of some of their preparations, and are able to refer to the following— *Lawton's Absorbent Cotton* for surgical and gynæcological purposes. It has much the appearance of very soft pure white cotton wool, and has this great advantage over the latter, that it readily absorbs mositure, in which respect, indeed, it may be said even to rival the well known properties of the sponge. It may, therefore, be used with great advantage for the purpose of cleansing ulcerated surfaces, and mopping up discharges. It may be soaked, too, in medicated solutions, dried, and afterwards employed as a local application in a great variety of cases. We may thus prepare excellent antiseptic, astringent, styptic, and other dressings, which will readily suggest themselves to the surgeon and to the gynæcologist. We believe that it will be found a very valuable adjunct in the local treatment of disease.

Effervescing Citrate of Caffein.—Tea and Coffee are by far the most universally used of beverages, and it has long been believed that their nerve stimulating effect is due to the closely allied active principles they contain—thein and caffein. These are not difficult to obtain, and naturally have been tried in medicine, but have never hitherto taken a recognised place among our remedies. This is probably due to the much greater ease with which the drug can be both prescribed and taken in the familiar forms of tea and coffee than in a prescription dispensed by the chemist. It is, however, well known to practical physicians, that the excessive use of tea and coffee is ofttimes injurious, more from the accompanying ingredients than from the active principle. There has lately been introduced to the profession a preparation called Bishop's Effervescing Citrate of Caffein, which we have found useful. The cases to which it has proved in our hands most serviceable have been examples of nervous headache, more particularly the distressing form of that complaint where the patient wakens in the early morning with severe headache, which continues until a cup of strong tea has been obtained. This is usually difficult, if not impossible to get, at an early hour, but the patient can easily take a dose of the citrate, which acts far more quickly and certainly than the tea, and thus obtain refreshing sleep, or at least relief from several hours of suffering. We have also seen benefit of the most marked and rapid nature derived in a case of menstrual headache ; but on the other hand we must confess having administered it in several seemingly suitable cases altogether without effect. Like guarana, gelseminum, and

other much vaunted specifics, its action seems so closely
dependent upon idiosyncrasies that its effects cannot be clearly
foretold. Yet it would be unfair not to give an obstinate
case of headache the chance of the benefit it may produce. It
fortunately belongs to that most invaluable class of drugs—
those which can do no possible harm and very often do a great
deal of good.

REVIEWS.

Practical Lithotomy and Lithotrity. By Sir Henry Thompson,
F.R.C.S. Third Edition. London: J. & A. Churchill. 1880.

That the third edition of any surgical text book should be so
slightly altered from the first edition, published nearly twenty
years ago, as is the case with the work now before us, is surely
a high compliment to the author's learning and completeness
of statement, while it may also indicate that the subjects
treated of have not made any marked advance in recent years.
In this, the third edition of Sir H. Thompson's well known
work, the descriptions of the various operations for the removal
of stones from the male bladder remain unaltered, a few fur-
ther practical hints only being added as the result of his
increased experience. In the earlier chapters we have the
same graphic and not too elaborate description of the anatomy
of the parts concerned in lithotomy, and the same able *resumé*
of the various cutting operations which appeared in former
editions. The chapter on the causes of death after lithotomy
has been enlarged and altered in arrangement. The following
is the classification now adopted:—

" A. Causes of death originating in errors or mischance in
the performance of the operation itself.

B. Causes which are very slightly, or not at all, under the
control of the operator, and existing, for the most part, in
defective conditions of the patient's constitution."

The first group includes hæmorrhage, urinary infiltration,
mechanical violence inflicted in the removal of the stone, and
perforation of the bladder. The second includes organic dis-
ease of the urinary organs, exhaustion, peritonitis, septicæmia,
and tetanus.

The statement of results from lateral lithotomy, given in

chapter vii, is the same as in the first edition, with the addition of the author's own experience to the end of 1876. In his own lithotomies, Sir H. Thompson does not seem to have been very fortunate. Out of 78 cases in *adult males* he has had 29 deaths. No doubt, many of these cases were of the worst possible kind, and such as were not in any way suitable for lithotrity, but which the great reputation of the operator brought from all parts of the country. Two of his cases, however, in which death resulted from perforation of the bladder, deserve the very careful attention of the supporters of the lateral operation, if, as he thinks, they were due not to the knife but to inordinate length of the staff, and that such accidents are not uncommon.

In his notice of the mortality returns from other operations we do not think sufficient justice has been done to Dr. Andrew Buchanan's method, so justly popular in Glasgow. The author has expressly omitted " the experience of the Glasgow Infirmary, numbering 152 cases, because a large proportion had been operated on by the method of Dr. Buchanan," and so were not suitable for tabulation among the results of lateral lithotomy, while he still retains the old statement that " Dr. Buchanan has reported upwards of 60 cases of his operation, performed by several surgeons, with as nearly as possible the same result as that exhibited by Mr. Allarton's table," that is, one death in eleven cases. It is time, we think, that Glasgow surgeons should publish their records in support of their favourite operation, as it is abundantly manifest that Dr. Buchanan's operation and its advantages are still practically unknown beyond the West of Scotland. In 1860, Dr. Buchanan predicted * that, in less than ten years, " counting from the day when the operation shall be first performed in the theatre of a London hospital, by a man who has carefully studied it and is duly qualified to perform it," it would be the dominant operation throughout England. We are still ten years at least from this consummation ; and of Dr. Buchanan's operation the old proverb is still true, " Unkenned, unkissed." How long shall it remain so ?

The latter portion of the book is devoted to a most minute description of the operation of lithotrity and the instruments to be used in its performance. The author gives short notes of 422 cases in which he has performed this operation, with a death-rate of about 1 in 13. He also describes Bigelow's new operation of litholapaxy, and speaks of it in terms of the highest praise. He thinks, however, that Bigelow's instruments

* *Medical Times,* April 14th, 1860.

are unnecessarily clumsy, and never uses any larger than No. 13 or 14 of our English scale. He has also devised a new aspirator for the operation, which is a modification of the original instrument invented by Clover. Short notes of 35 cases operated on by this method are given, and it is satisfactory to find that they have all been successful.

The work is thus in every respect very complete. The surgeon will find in it the fullest details of the best methods of operating, of the necessary care and treatment of his patient, both before and after the operation, of the complications which may occur and the result to be expected.

Anatomical Outlines for the Use of Students in the Dissecting Room and Surgical Class Room. By ARTHUR HENSMAN, with Original Drawings by ARTHUR E. FISHER. Part III, The Thorax and Abdomen. Part IV, The Head and Neck. London: Longmans, Green & Co. 1880.

THE first portion of this work has already been brought before the notice of the readers of the *Journal* (vol. x, page 374), and the parts now before us fully confirm the views then expressed as to the design of the author and the mode in which that has been carried out. In Part III Mr. Hensman has so far modified his plan as to introduce short descriptions of the position of the chief thoracic and abdominal organs in relation to the walls of those cavities; and as this is a department of anatomy which has until recent years been woefully neglected, we are glad to find a book to which the student may be referred for assistance and direction. The drawings throughout the work are clearly and boldly executed, and are for the most part models of accuracy; we must, however, take exception to the position of the uterus as shown in plate 86, and to the representation of the urachus in the same figure. Joseph has recently shown that in the normal position the uterus is in a state of anteversion and not of retroversion, as Mr. Hensman represents it, and although the greatly distended bladder in the plate under discussion would no doubt partly account for the displacement backwards, it would not cause the organ to be carried behind the axis of the inlet. Besides this, we fancy any gynæcologist would be astonished if he found a normal os uteri wider than the external opening of the vagina.

So few students of medicine are accustomed to wield either pencil or brush that we do not anticipate the author will be rewarded for his genius and industry by finding his work

prove a commercial success, but we can assure him that it is held in high esteem by all engaged in the practical teaching of anatomy.

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The Anatomy of the Joints of Man. By HENRY MORRIS, M.A., M.B. Lond., F.R.C.S., Lecturer on Anatomy at the Middlesex Hospital. London: J. & A. Churchill. 1879.

ANATOMICAL literature has in this country been always rich in well written and copiously illustrated text books, but it is remarkable how few monographs have appeared, possibly because the few that we possess have not enjoyed anything like a rapid sale, and have not been, in a commercial point of view, a success. The publication of Mr. Morris's work on the joints is, therefore, an event, the importance of which cannot be over-estimated, following as it does the less complete work of Professor Humphry on the same subject, at an interval of more than twenty years. While anatomists will inevitably compare the present treatise with that just referred to, the difference in their elaborateness may be roughly guaged by the fact that while Humphry devotes only 160 pages to the joints, Morris's work extends to 450 pages. The latter, indeed, is so large a book, and enters so thoroughly into minute detail, that it is almost entirely removed from the class of students' books, and will be only appreciated and studied by teachers of anatomy, or by surgeons who find the particulars given in our ordinary text books insufficient to explain all the phenomena met with in disease of certain articulations. While these considerations are likely considerably to restrict the number of his readers, they do not detract from Mr. Morris's merit; nor can we, indeed, speak in too high terms of the perseverance and self-denial which have resulted in the production of what is really a magnificent work.

The author admits in his preface that he has not aimed at the exhibition of novelties, and a careful search through the book has convinced us that he has few to offer, nay more, he is unwilling to accept the novel descriptions in which other authors have indulged; for instance, he discards the much talked of Λ-shaped ligament of Bigelow, stating that "though the appearance may be produced by dissection, it does not naturally exist," and he is equally sceptical of the "meniscus" arrangement described by Meyer as existing in the carpal articulation. On the other hand, he accepts and describes the gleno-humeral ligament (ligament of Flood) so seldom to be

found in our text books, and believes in the existence of a true posterior ligament to the ankle joint.

The most prominent merits of the work are the description of all the structures forming a joint (bones, ligaments, cartilages, blood-vessels, and nerves) in the same section, the account of the bursæ in the neighbourhood of joints, which when distended with fluid often give rise to the diagnosis of joint-disease, and the exactness and care with which each ligament is described, and each movement studied. It is unfortunate that the author has not thought it necessary to obtain drawings of the bursæ from his own dissections, instead of reviving those of Monro (Secundus), which appeared, if we mistake not, about the year 1788.

In the description of the hip-joint, we do not notice any reference to the observations of Professor König upon the separation of the articular surfaces of the femur and acetabulum in positions of rest, the intervals being occupied by synovial fluid; nor does he refer to the fact that the radii of the head and of the socket are not exactly equal. These are, no doubt, small points, but as they have evoked much discussion in Germany and elsewhere, we expected to have found some notice of them here. Although he refers to the limited power of flexion of the hip when the knee is extended, he omits to give Cleland's explanation, that it is due to the shortness of the hamstring muscles. As to the use of the ligamentum teres, he says that it checks rotation outwards during flexion, and adduction during flexion, and thus keeps strictly within our knowledge; we quite appreciate his silence as to Mr. Savory's theory that the ligament is always tense in the erect posture, and that it thus supports the weight of the body.

The subject on which our author writes is so essentially dry that we doubt if even the genius of Mark Twain could elicit many sparks of humour from it; Mr. Morris has, however, devoted three pages to the consideration of the movements of the elbow and fingers in the expression of emotions, which are very lively reading. Take, for instance, the following:—
"The movements of the elbow and fingers are employed in anger or defiance when the fist is shaken and the elbow bent. In the calmness of bestowing benediction, the arm is raised at the shoulder and the fingers outstretched, so that the open palm can be placed on the recipient's head. In the bitterness of shame the face is covered by the hands, while we bend the elbows and involuntarily attempt to close the fingers upon the palms as they lie pressed against the forehead. In the agony

of grief we bend the elbows and wring the locked fingers;
while, on the contrary, in the abandonment of despair, we
throw our open hands and arms above our heads."

The work is very copiously illustrated with lithographic
plates, most of which are coloured; the drawings have been
carefully made, and do much credit to Messrs. Hensman &
Steele, who have given most important aid to the author in
contributing so striking a feature to the book.   The coloured
plates are, however, unfortunate as to the selection and group-
ing of the colours, sky-blue cartilages, chrome-yellow bones,
and crimson lake muscles, giving to the plates a thoroughly
unreal and glaring appearance; we may instance, as especially
faulty in regard to colour, the plates of the hand and foot
(pl. xxiv and xliii), the first of these forcibly reminding us
of a favourite expression with novelists—that a murderer has
been taken "red-handed."

As we anticipate that this will be, for many years to come,
the standard work of reference in all matters relating to the
anatomy of the joints, we are pleased to find it so well fitted
for occupying that position; it is seldom that we have to
notice a work so distingushed by general excellence, and so
free from textual and typographical errors.

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*A Practical Treatise on Sea-sickness: Its Symptoms, Nature,
and Treatment.* By GEORGE M. BEARD, A.M., M.D.   New
York: E. B. Treat.   1880.

THOSE who suffer from sea-sickness have now got into the
habit of looking with a kind of incredulous despair on the
frequently published remedies for this " contemptible disease."
Here is a short monograph on the subject, and the recommen-
dations given in it, albeit characterised by a good deal of
American self-satisfaction and assurance, seem to us at least
to call for a fair trial.

The author takes the sensible view that sea-sickness is a
functional disease of the brain, due to the frequent concussions
to which that organ is exposed from the irregular motions of
the ship.   An enumeration of its leading symptoms will
confirm this view—these are headache, backache, nausea of
various grades without vomiting, vomiting, pain in the eyes,
constipation and diarrhœa, menstrual suppression, hopelessness
and mental depression, abnormal appetite, neuralgic pains,
chilliness and flashes of heat, sleeplessness and nervous
exhaustion.   Taking this view of the disease, it is natural to

resort to remedies which act as sedatives on the nervous system.

The author places most confidence in the bromides, and he seems to have had considerable experience with them. He uses chiefly the bromide of sodium, but mentions the fact that, in Europe, this salt is not easily obtained, as in the moist climate it gets damp and deteriorates, and if a European he would use bromide of potassium. It should be given for three or four days before starting on a sea voyage, and continued regularly during the first few days after starting, and at less regular intervals during the voyage. A frequent mistake is to give too small doses. The dose at first should not be less than 30 grains three times a day, and in many cases it should be much larger. In few cases does the bromide disagree, and it produces its effects in nearly all.

But persons are often attacked with sea-sickness in whom no course of bromide has been undergone, and in that case the author begins his treatment with sulphate of atropine. He gives this agent hypodermically, in doses of one-hundredth to one-twenty-fifth of a grain, and it must be repeated with sufficient frequency to produce great dryness of the mouth. This treatment will often cause recovery from actual sea-sickness, any recurrence being prevented by the use of the bromide. Atropine may also be given by the mouth, but it is not safe to trust such a remedy to non-professional hands. Of less use are citrate of caffeine and canabas indica, which, however, may be useful in some cases.

Cancer of the Rectum: its Pathology, Diagnosis, and Treatment, including a portion of the Jacksonian Prize Essay for 1876. By W. HARRISON CRIPPS, F.R.C.S. London: J. & A. Churchill. 1880.

THIS is a work well worthy of careful perusal in all its parts. Originally written as the Jacksonian Prize Essay in 1876, its scope was then limited to the treatment of rectal cancer, but in its present form it embraces also the consideration of the nature and prospects of the disease. The author uses the word cancer in the sense of malignant, including, therefore, those tumours which, from their minute structure, have been called sarcomata, but which, in their clinical history, are often indistinguishable from the true cancers. The first chapter is occupied by an ingenious and concise review of the various theories regarding the origin and spread of cancerous

masses, in which, however, the author omits to mention the
very important suggestion put forward by Cohnheim—viz.,
that tumours may be accounted for by regarding them as
the result of the sudden overgrowth of particular groups of
embryonic cells, which have been in excess of the require-
ments of the part, and have lain dormant during the early
years of life.

The normal structure of the rectum is minutely described
in Chapter II, after which are given the pathological details
observed in disease. One of the most interesting parts of
the book is that in which the origin of the fibrous stroma of
rectal cancer is traced to changes in the cell walls, so that, so
far from the stroma of the tumour being that of the normal
tissue, it is rather to be regarded as an entirely new product
derived from the cells, the walls of which, lying in contact
with each other, undergo a sort of thickening or hardening,
and in this way form a stroma.

The diagnosis of rectal cancer is rendered difficult by the
insidious onset of the disease, and often by the absence of
pain in the early stages ; and in some cases the first hint of
the malady is given by the sudden occurrence of complete
intestinal obstruction. But frequently the symptoms are
clear enough, while the diseases for which rectal cancer
may be mistaken are few, and easily distinguishable from it.

Preparatory to the operative measures, there is, in Chapter
VII, a short account of the surgical anatomy of the parts in
which Mr. Cripps agrees nearly with Sappey, Velpeau, and
Legendre, as to the distance of the peritoneum from the anus,
fixing it at $2\frac{1}{2}$ inches when the bladder and rectum are both
empty, and $3\frac{1}{2}$ inches when distended.

The palliative treatment is discussed at length in Chapter
VIII, and then the greater question of excision of the cancer
is taken up. Mr. Cripps is of opinion that, in cases to be
operated on, the disease "must be within 4 inches of the
anus, and in women must not have extended on the anterior
wall farther than 3 inches, and the rectum must be fairly
movable on the neighbouring parts, and there must be no
sign of hepatic infection." The operation preferred is that
by knife and wire écraseur, the plan by ligature, described by
Maisonneuve, being rejected by our author after one trial as
"having nothing to recommend it." After removing the
diseased parts, he employs no dressings of any kind, nor does
he put any plug or lint into the wound, for they impede dis-
charge ; and for the same reason no stitches are used, as they
are sure to give way after interfering more or less with the

free discharge. The operation is successful in 83 per cent of the cases; and, the immediate risk of the operation being past, years may elapse before the return of the disease—years of freedom from the pain and distress of the local disease, during which time the defæcation may be quite normal (in 23 out of 36 cases), or nearly so (in 6 of the 36 cases), with only a few instances of incontinence (in 7 of the 36 cases).

The book is illustrated by eleven plates of lithographic drawings of a high order of merit. The style is plain and clear, and though in places a little monotonous, as where, in Chapter I, the too frequent use of the word *now* mars the text, it is always readable and easy to follow.

The Descriptive Atlas of Anatomy: a representation of the Anatomy of the Human Body; in 92 royal 4to plates, containing five hundred and fifty figures. London: Smith, Elder & Co. 1880.

THE plan of this work is most excellent, and to one who is unable to keep his anatomical knowledge always ready at demand, but who requires occasionally to refer to particular points, it will prove an invaluable aid. The plates represent the entire anatomy of the human body, and instead of a letter-press description, with letters or figures to aid in identifying the various processes of bone, or muscles, or blood-vessels, these structures are labelled *in situ.* The objection to such a method is that the letters forming the name are apt to obscure anatomical details, and much will depend on the aptness with which drawing and designation are combined. We are able to say that, although the lettering greatly detracts from these figures as pictures, yet, so far as we have examined, it does not interfere with the characters of the particular anatomical points in such a way as to make their identification difficult.

The advantages of an atlas of this kind will be best seen by an example. I want to know the position and relations of the thymus gland in the child, and I turn up the index and find a reference to page 47. There a figure is given illustrating the lungs, heart, &c., in a child one year old, and in this figure the size and position of the thymus gland in relation to trachea, lungs, heart, &c., are seen at a glance. Or I want to identify rapidly a particular convolution, and make a note of it for future reference, and I turn to plate 81, and find an illustration in which each separate convolution is labelled with its

particular name, and rendered easy of identification. It is needless to multiply illustrations, but the kind of thing will readily be gathered from what we have given. The book purports to be mainly intended for students, and we can believe that, to one who uses it in the course of his anatomical studies, it will be in the highest degree valuable as a work of reference in after life. To such a one the plates will be indissolubly associated with the actual anatomical parts, and will attain to a certain reality in the student's mind. But it has just as important a field among those who are no longer students. To the practitioner it will be useful when he has to perform an occasional *post-mortem* examination in which he may have rapidly to identify anatomical structures which are no longer familiar, or when he desires to obtain a general survey of the relation of organs in connection with a case.

In regard to the manner in which the work is carried out, it is impossible, of course, to say whether anything approaching to absolute accuracy has been secured; but, so far as we have been able to check it, going over ground familiar to ourselves, it may be depended on in its various parts. In the execution of the plates there is frequently a degree of coarseness, which perhaps is inseparable from a work of this extent, which is to be sold at a moderate price, and this hardly detracts from its real value. The index at the end is tolerably full, and the work is neatly and substantially bound. We learn that the volume is edited by Mr. E. Noble Smith, who, along with Dr. Klein, has brought out the excellent Atlas of Histology, just finished.

On Aneurism, especially of the Thorax and Root of the Neck. By RICHARD BARWELL, F.R.C.S., Surgeon to Charing Cross Hospital. London: Macmillan & Co. 1880.

MR. BARWELL has had the good fortune to have had a number of cases of aneurism of the thorax and root of the neck, which he has successfully treated by deligation of the large arterial trunks. In the present volume he enters fully into the differential diagnosis of such affections, touches briefly on the medical treatment which ought to be adopted before the aid of the surgeon is sought, and ends by giving the surgical curative procedures of which he most approves, detailing his cases in support of his opinions. There are some valuable hints which, from his experience, he ought to be well able to give, as to the best method of reaching and securing the third part of the subclavian, to which the reader's attention

is directed. Mr. Barwell gives a table of eleven cases of double distal ligature for innominate aneurism, four of these having been performed by himself; and we congratulate him on being so felicitous as to have cured three of these, the only three, by the way, out of the eleven, which are cured. The success thus obtained by him he attributes to the views entertained, and the practice followed, of the non-division of the arterial coats. The chief aim of this volume seems to be to show that, under antiseptic conditions and the use of the animal ligature, there is no longer any object in dividing the internal and middle arterial coats; not only so, but that such division applied to large arterial trunks is dangerous. In ligaturing an artery in its continuity, the aim of the surgeon ought to be the apposition of the coats of the vessel without their division, and to attain this end a flat, ribbon-like ligature ought to be employed. Mr. Barwell believes that the views inculcated by Jones, in 1805, concerning the division of the internal and middle coats of the artery, have remained unchallenged up till the time he read his paper before the Medico-Chirurgical Society. (See *Medico-Chirurgical Transactions*, 1879). The suggestion has, however, been long previously made by Lister, in his work on *The Ligature of Arteries on the Antiseptic System*, a quotation of which may be of use. "These appearances at the distal ligature are calculated to revive, under a new aspect, the old question whether it would not be better to avoid rupture of the internal and middle coats, which could easily be done by using a pretty thick piece of catgut, softened by steeping it in a watery solution of carbolic acid. In this way the wall of the vessel would be left from first to last entirely intact." Here we have not only the question raised as to the advisability of dividing the inner coats of the artery, but also the means of avoiding this division by using a pretty thick piece of softened catgut which is very near the idea of a flat ligature. But Mr. Barwell is not at all pleased with catgut as a ligature, considering it an unreliable material for tying arteries in their continuity. Among the bad qualities of catgut which he mentions are the following:—It often breaks with very slight traction; sometimes it dissolves too rapidly; sometimes not at all; sometimes it divides all the coats very quickly; occasionally it pierces a hole in them or in the neighbouring vein. The solution of this wonderful series of peculiarities which are attributed to catgut may be found in the statement which he makes—"Very frequently, when a fresh bottle of carbolised catgut is opened, it emits,

in spite of the disinfectant, a strong putrescent odour." If it does emit a *putrescent* odour, it is not *aseptic*, and ought not to be used. In aseptic catgut, the only one of these changes which can be sustained is that of becoming absorbed too soon, and that can easily be obviated by substituting other salts than carbolic acid in the preparation of the gut. Mr. Barwell does not, however, inform us as to the length of time during which the flat aortic ligature will resist the action of the tissues further than by stating that it has been used in seven cases with perfect success. The same may be said of carbolised gut, which has been used in far more cases with success; even Mr. Barwell has used it successfully in ligature of the subclavian and carotid arteries, and yet we know that it is apt to dissolve too soon. The desideratum is to supply information as to the length of time which the ligature made from the aorta of the ox takes before it softens in the tissues. Unless some clearer advantages are adduced in favour of the aorta of the ox as a material from which ligatures are to be made, it will be difficult to persuade the profession to abandon catgut, which has done excellent service hitherto, and when properly prepared, is thoroughly reliable and trustworthy.

We can agree with the author in his remarks on the ease and comfort which deligation of an artery affords to the patient, in preference to pressure and some other modes of treatment equally cumbersome and painful. On the whole, the volume before us is well worthy of perusal by surgeons, and in doing so, we would recommend them to refresh their minds by the perusal of Lister's *Observations on the Ligature of Arteries on the Antiseptic System.*

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

GLASGOW ROYAL INFIRMARY.

Reports under the Supervision of Dr. WILLIAM MUIR.

From Dr. Dunlop's Wards.

SYCOSIS MENTI, RESEMBLING A MALIGNANT TUMOUR. [Reported by Mr. J. M. Watson, House Surgeon.]—Daniel King, a labourer, was admitted to Ward XV on 3rd June. He stated that, four months ago, after being shaved by a barber in High

Street, he felt his chin become hot, and soon after pustules made their appearance. A medical man, whom he consulted, gave him an ointment to rub over the part, and advised epilation. This latter was not done, and in a few weeks the chin began to swell. On admission, the chin presented an appearance suggestive of epithelioma. The swelling, or tumour as it appeared, involved the whole chin, was hard, and the edges circumscribed. He complained of a sharp pain. There was some ulceration on the surface, and contiguous to the tumefication the face was studded with pustules, as was also his upper lip, which was somewhat swollen. Yellowish scabs were likewise formed here and there. But for the history of the case, and the appearance of the neighbouring parts, it would have been readily taken for epithelioma. The treatment adopted was first hot fomentations, the matter being pressed daily from the pustules. This was continued a week, when there was a manifest improvement, the swelling being softer and less painful. An ointment of the ammonia chloride of mercury was then ordered, in addition to the hot fomentations. The hairs, too, were extracted, and the result was that on 30th June the swelling had disappeared, as well as all trace of the sycosis.

SYPHILITIC SORE OF LIP—PECULIAR PERSISTENCE—TREATMENT BY THERMO-CAUTERY—CURE. [Reported by Mr. J. M. Watson, House Surgeon.]—John Rilley, a shoemaker, was admitted to Ward XIII on 16th May, with an ulcer on the lower lip. The history of the case showed that he had contracted syphilis three years before, and had suffered from the usual sequelæ. He was treated by a medical man for some time. Shortly after the treatment was discontinued an ulcer appeared on the lip, but this healed up perfectly on the treatment being resumed. Again, after a few months, the lip broke out, and gradually became worse, notwithstanding the use of the antisyphilitic remedies which had proved efficacious before. This went on for two years, treatment being resorted to at intervals. On admission, there was observed an ulcer somewhat excavated, the edges raised, hard, and evolved, discharging a fetid pus, and exquisitely painful, extending over the whole of the outer surface of the lower lip. The patient had a dusky, ill nourished, syphilitic look, and the inguinal glands were hard and rolling. He was put upon iodide of potassium, with bichloride of mercury, and a lotion of chloride of zinc was applied to the sore. At the end of a fortnight there was not the slightest improvement, when Dr. Dunlop had the patient put under

chloroform, and destroyed the surface thoroughly with the thermo-cautery. After this, pain was never complained of, and the sore healed up kindly. The bichloride and iodide were still continued and a simple water dressing applied.

He was discharged on 25th June perfectly cured. This case is an example of a syphilitic sore taking on a certain degree of local malignancy, so that it resisted all ordinary treatment for that disease, and yielded readily on the destruction of its surface. The extremely painful condition of the sore, too, is not characteristic of a purely syphilitic one, and was evidently dependent upon the local complication.

· From Dr. Morton's Wards.

VARICOSE VEIN WITH ULCER—OBLITERATION OF VEIN—RECOVERY. [Reported by Mr. Johnstone, House Surgeon.]—A. H., labourer, æt. 53, was admitted into Ward XIX of the Royal Infirmary on 11th November, with extensive varicosity of the veins of the left leg, and a large indolent ulcer, situated a little above the ankle, involving more than half the circumference of the leg. On admission, the ulcer was dressed with Hey's wash, and the leg bandaged; but with no perceptible benefit. About a week after coming in, Dr. Morton inserted along the course of the long saphenous vein (which was dilated to about an inch in diameter) seven pins. These pins were removed in six days, the vein being completely obliterated, and the ulcer reduced to one third its original size. The recovery was a little retarded by an attack of pneumonia, which began on 8th December, but from which the patient perfectly recovered, and by the 17th the ulcer was completely healed. The portion of the saphenous vein obliterated is now about the size of a goose quill, and feels hard and rolling under the finger. The pins used by Dr. Morton for the obliteration of veins are just strong safety pins, with a drum-shaped pad of cork, covered with chamois leather, fixed on one of the limbs of the pin.

WESTERN INFIRMARY.

Reports under the Supervision of Dr. W. G. DUN.

From Professor Macleod's Wards.

DUPUYTREN'S EXOSTOSIS. [Reported by Mr. Howells.]—The patient is a healthy looking young woman, aged 22. About a

year ago she began to suffer from pain in her left great toe. As this was thought to be due to ingrowing nail, the top of the nail was pared away, and shortly after the inner half removed. A painful ulcer soon formed here, and by the advice of her medical man the remaining portion of the nail was also removed. Various dressings were applied, but as healing did not take place she entered the hospital. Walking was now very painful, and the entire toe was swollen and very tender. The outer third of the nail had grown again, but the rest of the ungual surface was occupied by a very prominent and unhealthy looking ulcer. The ulcer was elevated on a firm hard base, standing high above the surface of the bone.

On 12th November, chloroform having been given, Dr. Macleod removed the nail, and pared away the growth with the ulcer. The basis was found to consist of cartilage growing from the upper surface of the bone. The usual antiseptic dressings were applied, but changed after a few days for a simple astringent and stimulant lotion. The patient was kept in bed. Healing went on quite satisfactorily, and when patient left on 7th December, the wound was almost entirely whole.

The part removed from the bone was examined by Dr. Coats, and was found to be cartilaginous and fibro-cartilaginous, with a large impregnation of lime. This was evidently the early stage of those " osteo-cartilaginary" exostoses of the last phalanx of the great toe, first described by Dupuytren (*Leçon's Orales*, vol. ii, p. 110). Another, but much more advanced case, was operated on by Dr. Macleod in the hospital some years ago, in which the growth had attained the construction of firm bone, and there was a slight appearance of the formation of another similar growth on the corresponding portion of the other foot. Dr. Macleod had also a female patient in the Royal Infirmary, who had outgrowths of considerable size on the last phalanx of each thumb. She came for advice about another affection, and though she suffered great inconvenience from these projections she would not have them removed. These were not the horny growths which are occasionally met with, coming from below the nails, but marked and undoubted exostoses—hard and prominent outgrowths. The only treatment is effectual excision.

CASE OF FROST BITE—RECOVERING.—J. M'L., aged 34, employed in the Post Office service as a letter stamper, was admitted on 22nd November, 1880. Patient looks pale and weakly, but seems always to have enjoyed good health.

On 20th November he left Carlisle at 4 A.M., and was employed during the run to Glasgow in stamping letters in the mail van. The weather was intensely cold. By the time he arrived at home he experienced sensations of numbness and undue weight in both hands, and, to secure relief, he put them into hot water. He was busily employed during the remainder of the day, but his hands continued to annoy him, and, in the evening, commenced to swell, became redder than usual, and were painfully hot, especially the fingers. He again resorted to the hot water, but the reaction was so intense that he put his hands out of the window into the cold night air, and in that position slept until 3 A.M. on the 21st. On awaking, he found his fingers were quite stiff, and had lost all power of tactile sensation. The pain gradually increased, and the redness gave way to livid discoloration.

Upon admission, on the morning of the 22nd, the fingers of both hands were rigid and slightly flexed. Vesicles had formed along their dorsal aspect, and the skin and nails were of a livid blue colour. There was almost complete stasis of the blood, and scarcely any sensibility, the fingers being cold and clammy.

The toes were similarly affected, but very slightly, vesicles having formed along the dorsal aspect of the great toes, and a livid line being clearly perceptible running across the other toes. The lobes of the ears and tip of the nose were also faintly discoloured. The hands and feet were dressed with cotton wool, and the hands placed on a pillow. On the 23rd some of the vesicles burst, and the rest were opened. The fingers were dressed with lint saturated with carbolic oil, and cotton wool applied over all. Sensibility had returned to some of the fingers. On the 26th, the insensibility was limited to the little and ring fingers of the left hand, and the index finger of the right hand. The skin was sloughing, and also the deeper tissues on the fingers just referred to. Poultices saturated with carbolic acid were applied to both hands, and repeated every six hours. On the 29th, the loosened portions of slough were clipped away. The lobes of the ears and tip of the nose had now quite recovered, and the toes were almost well, the discoloration alone remaining. On the 1st of December, the skin over the tips of many of the fingers came away, with the nails adherent. On the 7th the remaining nails came away, with the exception of that of the left thumb. On the 9th, the left little finger was separated with the scissors at the first phalangeal joint, beyond the line

of demarcation. On 16th December the tips of the left ring and right index fingers had still to come away, and the first phalangeal joint of the right little finger had been opened. Both thumbs were healed, and the remaining fingers were skinning over rapidly. The general condition of the patient was good.

Remarks.—The extreme irritability of the tissues proximal to those killed is very marked in frost bite, and they will not allow of interference till the " line of separation " is complete. Dr. Macleod waited for that, and then removed the dead parts with the least possible irritation at the joints, some of the ligaments and tendons having alone to be cut.

FROM PROFESSOR M'CALL ANDERSON'S WARDS.

SEVERE HÆMATEMESIS—RECOVERY.—G. B. was admitted 16th September, 1880, in a condition of extreme prostration, consequent on an attack of vomiting of blood. His whole appearance was exceedingly pallid and feeble, and on this account there was some difficulty in arriving at the exact particulars of his case. It was elicited, however, that he had had three successive attacks of hæmatemesis, the first 16 months, the second 9 months, and the last about 4 weeks before admission. This attack appears to have been much more severe than the former two, blood being passed in large quantity, both by the mouth and the bowels, the quantity vomited being described as a " bucket-full." This large vomiting of blood was followed by several smaller discharges, and on some occasions he appears to have been partially unconscious before the actual vomiting took place. In connection with all these attacks he experienced severe pains in the stomach previous to the discharge of blood, and particularly on the last occasion, when the hæmatemesis was preceded by pain in the stomach for nearly 24 hours.

At the time of examination, patient's appearance was exceedingly exsanguine, the lips pale, and the skin generally suggestive of œdema, which was most apparent in the legs and the chest, where slight pitting was produced by the pressure of the stethoscope. Other symptoms complained of by the patient were palpitation, shortness of breath, and indefinite pains in the limbs. A loud blowing murmur V. S. in rhythm was distinctly audible over the entire cardiac area, and was of almost equal intensity throughout.

On examining the lungs dull percussion was found at both bases, especially the left; the respiratory murmur was weak

all over the right side, and almost entirely suppressed over the left, but no definite râles were detected.

Treatment was begun on 17th September, the day after admission, when patient was ordered to confine himself absolutely to the recumbent posture in bed; his diet to consist of milk and cooled beef tea taken in small quantities, and frequently during the day, with, in addition, pounded raw beef in the form of sandwiches for dinner. A tablespoonful of Burrough's beef and iron wine, and a powder containing 5 grs. of potass. bicarb. and 3 grs. of bismuth were given thrice daily. On the fourth day of the treatment, underdone beefsteak was substituted for the pounded meat, as the latter appeared to make patient somewhat sick.

On 25th September it was noted that the patient was feeling considerably stronger, and taking a good quantity of food, which appeared to be fully digested. Palpitation was almost gone, but the V. S. murmur still continued. An examination of the blood with Dr. Gowers' hæmocytometer showed the number of red blood corpuscles to be, on an average, 33 per hæmic unit—that is to say, the number in healthy blood being 100, there were here only 33.

On the 4th October a decided improvement was noted in the condition of the patient, his colour and general appearance being much less anæmic, the dulness at the pulmonary bases almost gone, and the cardiac physical signs much less marked. The number of red blood corpuscles showed an increase of 8 per cent on the previous note. His condition was so far satisfactory that he was allowed to sit up for half an hour daily, but in consequence of a slight return of the hæmatemesis on the 10th, he was again ordered to remain in bed. On the 15th the red blood corpuscles amounted to 50 per cent, being an increase over the previous note of 9 per cent, and an increase since the commencement of treatment of 17 per cent.

Regarding this case there is not much more to be said. The improvement observed about the beginning of October has been steadily maintained, his countenance has a much more natural hue, and he expresses himself as stronger and better every way. There has been no return whatever of the hæmorrhage. The cardiac murmur heard on admission is no longer audible, and the condition of the lungs is now nearly normal. He is able to be out of bed every day for some time, and his diet does not require to be so stringently supervised. An examination of the blood on 16th November showed a further increase of the red corpuscles, averaging **61 per cent.**

Two Cases of Spinal Irritation.

CASE I. The patient is a strong, robust looking young woman, aged 25, and evidently hysterical. She was admitted to the hospital on 15th November. She made no mention of any affection of the spine, but complained of pain underneath both mammæ, and in the left iliac region. The pain under the left mamma had been present for about 18 months, and was of a dull, aching natuie; that on the right side was much more acute, and commenced suddenly in August last.

The thoracic and abdominal viscera seemed quite healthy, but on making firm pressure with the fingers along the spines of the vertebral column, two tender spots were discovered at different levels, corresponding very much to the points at which the spinal nerves issue, which supply the areas in which pain was complained of. The patient winced visibly when those points were pressed.

A tonic mixture containing strychnia and quinine was ordered, and on 18th November two large blisters were applied over the tender parts of the spine. This was followed by a certain degree of relief from the mammary and iliac pain, by no means, however, complete. On the 29th, therefore, the blisters were repeated, and on 8th December the patient left quite relieved of her symptoms.

CASE II. The patient is aged 22, and enjoys fairly good health, but for three months before admission to hospital on 27th November, she suffered from pain about three inches below the left nipple, this was increased during inspiration; she had also a dry spasmodic cough without any expectoration, and exercise of any kind rendered her breathless. After taking food, too, she complained of pain in the gastric region, and was troubled with sour eructations. Her appetite was good. Two years ago the menses were suppressed for three months, and during that time she had an attack of pain in her breast as at present, but on the return of the menses the pain disappeared. There was no apparent disease of the stomach at the date of admission to hospital, and the heart and lungs seemed also sound. On examining the spine, however, tenderness was detected from the sixth dorsal to the first lumbar vertebra, and chiefly on the left side of the spine. Of this condition patient was quite unaware until examined. On 10th December, she was wet cupped over the upper portion of the tender part of the back to 10 drs. The almost immediate result of this was the entire disappearance of the spasmodic cough and the

stomach symptoms, but the mammary pain still continued. On 16th December the cupping was repeated over the lower portion of the tender part, with the result of removing the pain of the side.

Remarks.—Both cases are fairly characteristic, the second especially bears out the statement made by Dr. Anderson in his *Clinical Medicine*, that in this affection the "symptoms are of the most varied kind, so much so that it may simulate almost every kind of ailment." In the two cases just related, the detection of the spinal tenderness, and the absence of other signs of disease, together with the sex of the patients and their hysterical temperament, made the diagnosis pretty clear.

MEETINGS OF SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

SESSION 1880–81.

MEETING I.—2ND OCTOBER, 1880.

DR. GEORGE BUCHANAN, *President, in the Chair.*

DR. M'VAIL read a paper entitled AN EXPERIMENTAL INQUIRY AS TO THE CAUSE OF PULSE DICROTISM. He referred to his former paper on the same subject, read before the Society in October, 1873, in which was advocated, for the first time, the theory that the dicrotic wave was a transverse oscillatory wave produced in each transverse segment of the artery as an after effect of the passage through it of the great primary pulse wave. The results of the present inquiry showed this view to be correct. In the first part of the paper were described experiments made with india-rubber tubes having different diameters, but the same thickness of wall, and through all which, from the same source, tension waves were simultaneously sent. In each, the tension wave was followed by a secondary wave, and it was shown that the interval between the primary and secondary waves—the pre-dicrotic interval—was longer, the greater the diameter of the vessel. This secondary wave, therefore, was not a wave propagated from either of the extremities of the tube, but

was produced in each individual transverse segment of the tube.

In the second part of the paper it was shown that this held good for the arterial system in the living subject. In pulse and aneurismal tracings simultaneously taken, the pre-dicrotic interval was longer the greater the aneurismal dilatation. So that here, also, dicrotism is a transverse oscillation produced by every individual segment, and not a wave either from the cardiac or peripheral end of the arterial system.

The President expressed the great pleasure he had had in listening to Dr. M'Vail's paper.

Dr. Fleming remarked that about two years ago he had, quite unaware that Dr. M'Vail was working at the subject, begun to study it; and that he had embodied the views he then arrived at in a thesis for the degree of M.D. This paper had not yet been published, but he hoped to bring it before the Society at a not very distant date. In this paper he had stated at length the reasons why Dr. M'Vail's views, as to the local vibration of the arteries, did not convince him; but at present he only wished to refer to two points. He wished, however, to state that his present remarks only referred to Dr. M'Vail's former paper, and not to the present one.

And firstly, as to what might be called the fundamental experiment on which Dr. M'Vail founded his conviction that because there were no valves in his apparatus, and yet a wave sent along the tube is followed by a secondary wave, this secondary wave could not be reflected from the centre. The experiment on which he founded this conclusion was that in which he adjusted a syringe to an india-rubber tube, and pushing down the piston of the syringe, sent a wave along the tube. This wave was followed by a dicrotic notch, and his conclusion was, that because there were no valves in this apparatus the notch was due to a local vibration. But a valve is a part of the apparatus which closes at a certain time, and thus stops the reflux of fluid, and there could not be a more perfect valve than the closed piston of the syringe.

The conclusion Dr. M'Vail has come to, no one can deny, so far as it says that there is a local vibration of the wall of the vessel, because all pulse waves are due to an up and down vibration of the arterial wall. But it does not explain the nature and causes of this local vibration. It is not a mere vibration such as is got in a fiddle string, because the arteries are not lying bare on a table, but packed tightly among the tissues, and a fiddle string, if so packed, would not vibrate at

all, or would only give a single vibration. To imitate, therefore, the conditions found in the body, Dr. Fleming performed the following experiment. He took a pretty deep cup and filled it with mercury. Under the mercury he put the tube from which the tracings were to be taken, and connected it by a wire with a kymograph. If this local vibration in the tube were the cause of the dicrotic notch, the inertia of the mercury would do away with it. But it did not, and under appropriate conditions the notch could be as well produced with the mercury as without it. This seemed to go a long way to show that no local vibration in a vessel would account for the notch, though he did not deny that all motions in vessels are local vibrations in so far as they are up and down movements.

Dr. M'Vail called attention to the fact that Dr. Fleming's remarks bore rather on his previous paper, and he would therefore delay any formal criticism.

As to Dr. Fleming's experiment of attempting to damp out the vibrations in the tube by packing it under mercury, it must be remembered that the pressure inside the vessel is equal to 8 inches of mercury, and it would need an enormous column of mercury, therefore, to damp out the local vibrations.

MEETING II.—5TH NOVEMBER, 1880.

DR. GEORGE BUCHANAN, *President, in the Chair.*

DR. FINLAYSON read " Illustrations of Epileptic Mania and of the Automatic Phenomena of Epilepsy; likewise of Maniacal Attacks following, and also taking the place of Uræmic Convulsions." See page 441, vol xiv.

Dr. Robertson remarked, with regard to the epileptic mania, to which Dr. Finlayson first referred, that it was very common in asylums, and was very troublesome to deal with. Its chief characteristic was the violence, accompanied by destructive acts, as in a case in which the patient, on being asked the reason for some act of his, sprang at him (Dr. Robertson), and was only mastered after a struggle. He was afterwards confined in an asylum. This mania may occur before the fits, or may take their place, or, and this is by far the most common, may supervene after the fits. Regarding the automatic phenomena which Dr. Finlayson next referred to, it may be remarked that they are of a most interesting nature; it is only

of late that attention has been directed to them. They are not uncommon in asylums, though not so common as the mania, and are associated with the slighter forms, when no con- vulsions occur. The following cases show that acts may be carried out in a purposive way, though consciousness is in abeyance, and may serve to illustrate this subject. A female patient, who was in the day room, got up from her seat, and began to spread the table for dinner, and to arrange the dishes on it, though it was only eleven o'clock. When stopped from doing so, she took up a stocking she had been knitting and began to unravel it. In two or three minutes she came out of the fit and did not remember anything of what she had been doing. In another case, that of a man sent into the asylum, he had been in the town, and, when speaking to an acquaint- ance, suddenly went down stairs and into the road, where he recovered consciousness ; he also knew nothing of what he had done. A man who was asking a blessing before food was seized during it, but went on to its close quite correctly, though it was obvious to those about him that he was in a fit. In a minute or two he recovered and did not know anything of what had happened.

Passing to the second part of Dr. Finlayson's paper, Dr. Robertson remarked that Bright's disease among the insane was very rare, though he had seen one or two cases, and related the following instances. A man was sent into the general wards of the hospital in a confused mental state, and though tolerably calm at first, he afterwards became much excited, and was confined in the asylum. There were in this case indications of dropsy, puffiness about the eyes, and œdema of the feet, and treatment directed to its removal was followed in a few days by the passing away of the mania, showing that it had been due to the uræmic poisoning. In another case, that of a man who, before admission, had attempted to run down stairs naked, and in the ward also tried to go about naked, insanity was shown by his persistent wish to go home though he was so ill that he died in about a month. In other respects he seemed pretty reasonable.

Dr. Adams related two cases, the second of which he had made the basis of a paper on this subject four or five years ago, though he had not yet brought it forward. The first case, that of a girl, was of a very remarkable character, in that the seizures always returned at a particular hour of the day. In the first part of her illness she was seized at a particular hour with paralysis of the lower limbs, lasting for a certain time. During this period she was taken about in a perambulator, and

was sent to the country for a time. This afterwards changed, and she was then seized with a disposition to roll about in bed. The second case occurred in the practice of his nephew, Dr. Adams, and was that of a girl, 12 years old. During a period of two or three months, at a particular hour of the day, she was seized in the following manner:—She would be thrown on her face, and would continue for half-an-hour rocking backwards and forwards like a hobby horse, her knees drawn up and her head thrown back. The positions she put herself in were such that it was difficult to imagine any one remaining in them. The manner in which these attacks came on was particularly interesting. The attack took place each day regularly at twelve noon, and on one occasion the clock was put forward half-an-hour without the patient's knowledge, and the was then engaged in conversation until the clock had apparently passed the hour. Yet, when it approached close to the real time, she went to her mother, put her arms round her, and then all on a sudden she began to struggle, and on being put to bed went on with the rocking as before, for half-an-hour, during which time she was quite unconscious.

Dr. Fraser noticed the great interest that attached to the connection between mania following Bright's disease and epileptic mania, mentioning that in a patient of his, quite recently, where acute mania followed puerperal convulsions, the resemblance to epileptic mania was very striking.

He also related the following cases:—The first, that of a young man, in whom the aura epileptica, commencing in the epigastrium, passed up to the right ear, and then the patient began to spit; and though he never lost consciousness, the continuance of this for about a minute, and the presence of flushed face and engorged conjunctivæ, testified to the existence of a fit.

In another case the epilepsy followed a blow on the head, and in it there was complete hemiplegia, and hemianæsthesia on the right side. Death followed in eleven days, and at the *post-mortem* examination no great alteration was found in the brain.

Dr. M'Call Anderson remarked that the great variety in the character of the seizures in epilepsy rendered it difficult to define them, and thought that the most invariable symptom was unconsciousness. The great variety of the seizures often rendered the diagnosis very difficult, and to illustrate this he mentioned one or two cases.

One patient came complaining of a pain in his stomach coming on suddenly, which had been treated as stomach disease,

without success; and, as after the pain came on it passed up to the head, epilepsy was suspected, and the patient put on bromide of potassium, resulting in a cure. In another case, the patient, who was in the Western Infirmary, would suddenly give a scream, and roll over from the right to the left side, and by the time he had reached the left side the fit had entirely passed off. In Trousseau's *Clinical Medicine* is related a case of a judge who, during the course of a trial, was observed to get up and go to the next room, and after a short absence return and go on with the trial. Being followed on one occasion, it was found that he went to the corner of the room and there passed water, and then returning, went on as if nothing had happened. He did not know anything of what he had done. These are instances of the great variety in the mode of onset of the seizures, and in all these there was a certain amount of unconsciousness.

Mr. John Reid remarked that he had listened with great pleasure to Dr. Finlayson's paper, but he did not agree with him in some respects. He thought that those cases which he had given, particularly in young individuals, had not been so much of the epileptic nature as Dr. F. thinks. He had had such cases in his own practice, and had considered that they were more of the nature of chorea than of epilepsy, and perhaps chorea combined with eclampsic fits. Epilepsy, *per se*, was an attack which invariably renders the individual totally unconscious, and incapable of performing any motion whatever except the automatic, as stated by Dr. F. The first case which Dr. F. gave, of the boy, seemed to him to be a case of exalted chorea, and was, in his opinion, made a great deal worse by the bromide of potassium and chloral.

Dr. Cameron related a case he had seen a few weeks ago. A servant girl had borrowed the clothes of a little boy in the house, and, after donning them, went to see her own mother on the South Side, a very unlikely thing to do. She was sent back, and it might have remained unknown, but that some menstrual discharge had stained the trousers, and the boy, on being questioned, told that he had lent them. The girl, however, denied all knowledge of it, but, when pressed more closely, said it was to annoy her mother she had done it. It would appear now, on looking back on the case, that the girl had really been unconscious, and that it was through fear of losing her situation she made the admission that she knew of it.

Dr. Finlayson, after thanking the members for the reception they had given the paper, mentioned that it did not profess to

bring forward anything new, but consisted merely of illustra-
tions of the subject it treated of, and that he had intention-
ally avoided entering into theoretical considerations.   He also
stated that he was interested to hear from Dr. Robertson that,
even with his large experience, cases of mania complicating
uræmic cases are rare.   Another case of a little girl, who had
for some months been affected with disease of the kidney,
with abundance of albumen in the urine, and was, for a
period of twenty-four hours, markedly maniacal, he had not
introduced, because there were other complications which
might have led to dispute.   He also again called attention
to the statement he had made in the paper, that it might
prove valuable, in a medico-legal point of view, as coming
from a physician in general practice, and not from a lunacy
expert.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1880–81.

MEETING II.—9th NOVEMBER, 1880.

The President, DR. HECTOR C. CAMERON, *in the Chair.*

DR. FINLAYSON showed SPECIMENS FROM A PATIENT WHO HAD
DIED FROM THROMBOSIS IN THE HEART AND VEINS, EMBOLISM
OF THE PULMONARY ARTERY, AND GANGRENE OF THE TOES.—
The femoral veins were completely occluded by clots; these
were pretty firmly adherent and presented a granular aspect on
the surface, the clots extended up to Poupart's ligament.   The
right innominate vein was also filled with a similar but more
recent clot, and this extended into the subclavian and the
beginning of the jugular vein.   The arteries were slit up down
the thighs, and found free from clot; the posterior tibial at the
ankle was examined, and likewise found pervious.   The heart
was very slightly enlarged, and contained numerous thrombi;
but the valves were normal.   A very slight exudation was found
at one part of the pericardium, the inflammation having ap-
parently extended from the pleura, as the pericardium was
adherent to the lung at this part.   The left ventricle contained
a very large thrombus, firmly embedded amongst some muscu-
lar trabeculæ, and this clot felt as if softening in its centre.
The right ventricle contained very numerous thrombi adhering

to various parts of the wall; they were of various sizes, but most of them small; some small thrombi were also found in the right auricle. The pulmonary artery going to right lung was plugged in one of its larger branches; very numerous and large hæmorrhagic infarctions were found in this lung, apparently recent, with much bloody exudation. The pleura on this side presented recent inflammatory exudation, and also a large quantity of bloody serous effusion. The left lung presented similar consolidations, apparently older and somewhat browner on section; the branches of the pulmonary artery were also plugged on this side, and on slitting up the vessel these were frequently found at the subdivisions of the arteries; the pleura presented recent exudation on the surface, and contained a little pale serum. The only embolic lesion found in the systemic arteries was a moderately old yellow infarction in the kidney.

The patient was 42 years old, employed in a cloth warehouse, but perhaps of doubtful temperance. She was in the Western Infirmary nine days only, having died on 4th November. She had had nine children, the last seven years ago; she was still quite regular and menstruated during her last illness. She had no history of any recent or indeed of any serious disease; although she had rheumatism when seventeen years old, she had not been since affected, and no heart mischief had resulted.

Three weeks before admission she was seized with dyspnœa in the street while in her usual health; this became worse at night, and was so extreme that for the three weeks before admission she scarcely ever lay down, sitting up in a chair night and day. Soon after this the feet, legs, and thighs began to swell; and when seen first this œdema was very extreme in both lower limbs, and extended up to the lower part of the trunk. On the day of admission the patient noticed for the first time some blackness of the toes of both feet; this increased, and presented a typical appearance, with red and black areas sharply defined. The urine was albuminous. The pulsation of the artery was felt in the groin, but owing to the dropsy could not be traced lower. The heart, on admission, had a cantering action, but this passed off, and no bruit or other abnormality was detected. The patient complained much of breathlessness, and, in addition, of pain below the left mamma, where pleuritic friction was plainly heard. There were abundant generalised moist râles on both sides, especially at the back, without any notable dulness on percussion at first. Three days after admission she brought up a

few sputa, consisting of almost pure blood; this was the first hæmoptysis which had occurred so far as she knew. At the same time dulness on percussion in the right back supervened, and soon became more extensive and more distinct; there was no tubularity of the breathing. On the same day she began to have swelling of the fingers and hand on the right side, and this rapidly extended up the arm, even to the shoulder; the superficial veins here were distinctly distended; the patient complained of considerable pain and tenderness at the inner aspect of the humerus; the swelling of the arm was very tense, and did not pit on pressure, but in the course of a few days the tension became less, and pitting was then produced; the appearance of the limb resembled that of phlegmasia dolens.

No striking change occurred in the symptoms; the breathlessness varied considerably; the gangrene became arrested; the pulse rapid and weak on admission, became much stronger under the free use of stimulants; the temperature reached 100° F. on one occasion, but was often rather under the normal, and seldom over it; no shiverings occurred at any part of the illness.

In commenting on the pathology of the case, Dr. Finlayson said that no cause had been discovered to account for the extensive thrombosis in this case. The view taken during life was that the thrombosis, which evidently existed in the veins, had caused embolism of the pulmonary artery, with hæmorrhagic infarctions of the lungs and secondary pleurisy. The explanation offered of the occurrence of pulmonary symptoms *before* the local manifestations in the limbs, was that the clots, at this early period, although insufficient to fill and occlude the veins, were more likely, on that very account, to be detached and washed into the lungs. He pointed out that in the history of puerperal cases, the pulmonary symptoms seemed often to precede the swelling of the leg. The presence of clots in the heart might, no doubt, account for some of the infarctions, but he pointed out the coincidence of the thrombosis of the subclavian vein with the supervention of fresh embolic lesions in the lungs, signalised by the appearance of bloody sputa.

In discussing the cause of the gangrene of the toes, he said that thrombosis of the veins alone seemed to be a very rare cause of gangrene; but this was combined with great dropsy and with constant sitting up night and day in cold weather; the heart's action, moreover, was enfeebled by the presence of large thrombi, and under these circumstances the occurrence of gangrene was less wonderful.

Dr. Joseph Coats thought that the thrombi were of older

date in the heart than in the veins, as the thrombus in the left
heart was softening, and this implied a prolonged existence.
In the veins the thrombi were less dry, and exhibited' no
tendency to softening. The infarction in the kidney was also
evidently of much older standing than those in the lungs.
He thought the presence of thrombi in the heart was due to
the fact of inefficient contraction—simple weakness.

Dr. H. Cameron detailed three cases which had occurred in
his experience, showing that although the primary mischief
was thrombosis of the veins of the leg, still, pulmonary
symptoms were the first to appear.

THE SECRETARY presented, for DR. W. L. REID, A FIBROID
TUMOUR REMOVED FROM THE FUNDUS UTERI.—The case was
that of Mrs. B., aged 40, admitted to the Western Infirmary
11th December, 1879. Has been married nineteen years; one
only spent with her husband. Had one child a year after
marriage; the forceps was used, and she was a month in bed.
Has always menstruated regularly; but, for the last seven
years, has had dysmenorrhœa and menorrhagia, the latter
decidedly worse for the past two years. For four months
has had constant pelvic pain and leucorrhœa; and, during the
same period, metrorrhagia, sudden gushes of blood coming at
unexpected times, and without known cause. Has got rapidly
thinner and weaker, and suffers severely from difficulty and
pain in defecation and micturition.

On vaginal examination the canal was found distended by a
large, smooth, hard tumour, not tender on pressure. No cervix
uteri was discoverable, but a band running round the wall of
the vagina, at its upper part, was considered to indicate its
former position. Bimanual examination showed that a hard,
smooth tumour, felt deeply in the hypogastrium, was con-
nected by continuity with the tumour in the vagina. The
metal sound passed anteriorly 2½ inches, and posteriorly 1 inch
beyond the reach of the finger points. A gum elastic catheter,
with its stilette, passed all round to the depth of 3 inches.
The highest part of the tumour reached by the fingers was
about the thickness of one's wrist.

On the 24th December, the greater part of the tumour was
removed by the écraseur and chain saw. As there was no
neck to the tumour it was removed at the point where it
seemed to broaden towards the fundus uteri. Although
slowly cut, there was considerable hæmorrhage, and the
vagina had to be plugged with perchloride of iron lint.
Plug was removed ten hours after, and others soaked in

glycerine employed. Catheter had to be used once. Two days afterwards there was no pain or considerable tenderness, and the temperature was normal.

On 2nd January, 1880, the vagina was again found filled by the remains of the tumour, now evidently bringing with it the fundus uteri. There was again great difficulty with the bladder and rectum. On 6th January, the remainder of the tumour was removed with the écraseur, the chain being pushed as high as possible without including uterine tissue. Cutting lasted three quarters of an hour, and there was no bleeding. On 9th January it was noted that, while for two days before the second operation the temperature had varied from 102·4° to 104·4°, on the day after, it fell to 101·6°, and two days after to 98°. There was no abdominal swelling or pain, but the pulse kept about 120, and there was a tendency to retching. Micturition and defecation were now natural. About the sixth day after this operation, parotitis came on, and the patient soon became unable to swallow anything but small quantities of fluid. Discharge from the uterus was not great, but somewhat offensive. On the 16th January, a small quantity of pus was discharged from an opening made above the angle of the jaw; but, on the evening of that day, the patient gradually became weaker, and died during the night. A *post-mortem* examination could not be obtained.

Although this woman was not thought to be dying from loss of blood, and was near the usual period at which the menopause might have been expected, yet the operation had to be undertaken on account of the urgency of the symptoms from pressure on the pelvic organs, and because it is known that in such cases menstruation may not cease till much later in life than usual. The galvanic écraseur was not used, because at that time we could not succeed in keeping a large loop sufficiently hot while buried in the tissues. Now, with a battery of Grove's cells in an adjoining room, and the exercise of patience, one could cut through any tumour which might present itself. In regard to the use of the ordinary écraseur, Dr. Galabin, in speaking of this subject, says—"It is apt to fail by breaking of the wire, if not from yielding of the stem of the instrument in the attempt to divide such a broad surface of dense tissue." The instrument used for the operations of which we have been speaking was designed and made three years ago for use in difficult midwifery. It may be used with cord, steel wire, wire rope, or chain saw. The screw is very long, and, having 24 turns to the inch, also very powerful. The handle is very large, and hinged to the

body so as to be easily held quite firmly, and yet kept out of the way. There are two travelling nuts, one of which can be made to travel after the other has gone the whole length of the screw. This is managed by an adjusting screw at the bottom of the body, and secures complete saw-ing movement even with a large loop of wire or chain. The screw handle is three times the usual size, which gives power and delicacy in cutting even very hard tissues. In this operation, the strain on the chain was so great that it cut a furrow in the steel nose-piece, and took the head off the screw-nail which bound the main screw to the body of the instrument.

There is an interesting question connected with the attack of parotitis which apparently caused death. It is well known that we may have metastasis from the parotid gland to the testicle, uterus, and mamma. May we not, in this case, have had it from the uterus to the parotid gland ? Dr. Good says—" In advanced life, parotitis is sometimes apt to run into a chronic form, accompanied by very mischievous symp-toms. This is most especially apt to take place in females when menstruation is on the point of ceasing, and the general action of the system labours under some disturbance." Cope-land, under the head of " Parotid Glands," adverts to the fact that parotitis, occurring in the female about the time of puberty, is apt to be very difficult to treat. Dr. S. Ringer, in Reynold's *System of Medicine,* says that, " In the female, the mammæ, the labia majora, and uterus, are the parts occasion-ally attacked." It would thus appear to be by no means improbable that the uterine disturbance gave origin to the disease of the parotid gland ; the weakness resulting from which ended, unfortunately, in the death of the patient.

The SECRETARY presented for DR. MIDDLETON several MI-CROSCOPIC PREPARATIONS ILLUSTRATIVE OF VASCULAR LESIONS IN THE NERVOUS SYSTEM, IN CASES OF CEREBRAL EXCITE-MENT. In the course of an examination of the microscopic appearances presented by two cases of hydrophobia that had occurred in the Royal Infirmary, he had found the perivascular lesion described by previous observers, and he had been led to examine the nervous structures in other cases, with a view to find out whether this lesion was in any way characteristic. Of 24 cases examined, 15 showed this perivascular lesion, some of them in a form almost quite as marked as in hydro-phobia. Sixteen cases had had more or less marked cerebral symptoms, delirium, &c., and only four presented no vascular

lesion; among these were cases of fracture of the skull, erysipelas, delirium tremens, diabetes, tubercular meningitis, uræmia, &c. The frequency of the lesion in so many diverse diseases was held to indicate that it could not be attributed to any special irritant in the blood, but rather to nervous excitement; and the investigations seemed to point to the fact that the intensity of the lesion varies directly with the intensity and duration of the cerebral excitement.

The results are published in full in the *Journal of Anatomy and Physiology*, October, 1880.

GLASGOW SOUTHERN MEDICAL SOCIETY.

Session 1880–81.

Meeting II.—11th November, 1880.

Mr. T. F. Gilmour, *President, in the Chair.*

Dr. A. Patterson read a paper on A Few Surgical Cases, which appears at page 1.

Dr. Pollok related a case of ovarian disease which occurred in his practice. Ovariotomy was performed by Professor George Buchanan non-antiseptically, with a very satisfactory result. Catgut ligature was used. A teaspoonful of laudanum was administered by the rectum after the operation. The wound healed by first intention. The urine was drawn off for eight days. Menstruation appeared on the fourteenth day after the operation.

Mr. J. S. Nairne said the extraction of stone by the urethra demonstrated the great dilatability of the orifices of the human body. From experiments which he has performed, he finds that in some of the lower animals, particularly in dogs, the orifice of the mouth can be dilated to a great extent. In relation to the occurrence of pain in the left testicle in the case of supra-pubic lithotomy, he said he had a case of urinary calculus, with pain in the region of the right ovary. He extracted the stone by the urethra and the pain disappeared.

Dr. Napier said it would have been interesting to have taken the temperature in the rectum in the case of ovariotomy in which the scarlet rash appeared, as this would have shown whether the eruption was associated with a feverish condition of the system as a whole, or whether, as Dr. Patterson

contended, it was solely a local affair. It was not a new thing to have a rash like that of scarlatina after operations.

Dr. J. K. Kelly thought it would have been a good thing if the cases of ovariotomy had been summarised. He suggested that a nervous temperament, or possibly idiosyncrasy, might be the cause of the discrepancy between the temperature and the pulse.

Dr. E. Duncan said it was gratifying that a Member of this Society should have so much success in the performance of ovariotomy. He believed Dr. Patterson's success was due to the great care he took with matters of detail and to the antiseptic treatment. He thought temperatures should be taken in the rectum, as he has found a high temperature in the rectum while the skin temperature was normal. He asked if the scarlet eruption was followed by desquamation of the cuticle.

The President said the Society was indebted to Dr. Patterson for his valuable paper. He desired to know why choice was made of the supra-pubic lithotomy, it being so fatal.

Dr. Patterson said the low pulse showed the heat was in the skin alone. In cases of ovariotomy, if the temperature is taken frequently, it would be injudicious to take it in the rectum. As a rule, in the ovariotomy cases, the time between the operation and dismissal was twenty-one days. The large size of the stone was the reason for choosing the supra-pubic lithotomy.

Dr. Hall made a statement of his reasons for resigning his appointment as Medical Officer of the Burgh of Govanhill. The sympathies of the meeting were with Dr. Hall, and it was recommended that no Member of the Society should accept the appointment until the Commissioners make more just and reasonable terms.

MEDICAL ITEMS.

UNDER THE DIRECTION OF

ALEX. NAPIER, M.D.

Organisms Present in Cases of Enteric Fever.— Eberth has discovered bacillæ in greater or less numbers in the swollen mesenteric glands and in the spleen, in 12 out of 23 cases of death from typhoid fever. These organisms are

about equal in size to the putrefactive bacillæ found in blood; like these, they are slightly rounded at the ends, but have a less strongly marked outline, and are less deeply stained by methyl violet. The more protracted the course of the disease the less numerous they seemed to be. The author's investigations were carried on in the depth of winter; and as a further proof that the presence of the bacillæ was not connected with the length of time that had elapsed between death and the examination, it is mentioned that in one case in which the body was not disturbed for 59 hours after death no bacillæ were found. Ordinary putrefactive bacillæ were seen also, in the lymphatics and in parts of the intestine, but were easily distinguishable from the enteric fever bacillæ, by the difference in colour which they showed when treated with aniline dyes. The organisms under consideration were quite distinguishable also from those of diphtheria and pyæmia. Eberth regards it as probable that the bacillæ stand in some relation to the typhoid process, but what the nature of the connection really is has not yet been shown.—(*Virchow's Archiv*, lxxx, p. 58.) *Cbl. f. d. Med. Wiss.* No. 48. 1880.

Effect of Jablotschkow's Electric Light on the Accommodative Function of the Eye.—The frequent variations in intensity to which this light is subject, give rise to sudden and frequently repeated changes in the pupil, and, consequently, in the accommodation of the eye. A light of this kind, therefore, causes not only simple muscular fatigue of the eye, but also a considerable degree of blurring and indistinctness of the retinal image. The eye suffers both when the light is too dim and when it is too bright. In the former case the object looked at must be brought close to the eye to be clearly seen, and an increased accommodative effort is thus called for, which in most instances results in myopia. In the former case the simple intensity of the light produces undue contraction of the pupil, and consequently an increase in accommodative tension within the eye.—(M. Ljubinsky, in *Petersburger Med. Wochenschrift.*) *Cbl. f. d. Med. Wiss.* No. 48. 1880.

The Sulpho-Carbolates in Scarlatina, Small-pox, and Acute Tonsillitis.—Dr. Withers, in a paper read before the Ulster Medical Society, gives some interesting details in regard to the therapeutic action of these drugs in zymotic diseases. The preparation of the four most important sulpho-carbolates— viz., those of zinc, iron, sodium, and calcium, is described, after which Dr. W. says—" The sodium salt is the most powerful

in arresting saccharine fermentation, and as it is very soluble and tasteless, it has been the most extensively used. I have seen no ill effects from its administration in scruple doses every four hours. After being taken for a short time, the odour of carbolic acid can be detected in the breath. I have also noticed a slight looseness of the evacuations occasionally, which I would attribute to the sulphate of sodium, after the carbolic acid has been set free."

The sodium salt has been the form principally used; in scarlatina it was administered in 10 grain doses every two hours, being given in all to 31 cases, one quarter of that number being of an anginous or malignant character. Of these 31 cases 3 died, being a mortality of 9·7 per cent. After twenty-four hours' treatment, the throat symptoms diminished, and the patients proceeded to convalescence. In none of the cases was there any dropsy, and desquamation was slight.

25 cases of small-pox were treated with the sodium salt, and Dr. W. observed that, when commenced at once, the primary fever lessened, the throat symptoms diminished, and in none of the cases was there any secondary fever.

In acute tonsillitis, the hypertrophy of the tonsils rapidly subsided; there was rarely any suppuration, and power of swallowing was restored in a few days. The iron salt is more recommended in this class of disease.

Calcium sulpho-carbolate is strongly recommended in rickets, owing to its great solubility, and containing ninety grains of calcium in the ounce of the salt.—*Dublin Medical Journal.* October, 1880.—J. C. R.

Chian Turpentine.—This drug may be prescribed either in emulsion or in pill. The former, prepared with ether, gum acacia, and water, is a good enough form for administration, but most patients soon tire of the taste of the ether. Pills are frequently made with magnesia; but this is objectionable, as the turpentine forms with the magnesia a kind of insoluble soap which is very indigestible. The following formula is perhaps the best:—Chian turpentine, 3 grains; sulphur, 2 grains; dried carbonate of sodium, 1 grain; in each pill. Another elegant preparation of Chian turpentine is a trituration with sulphur and sugar of milk; this can be mixed with water, wine, milk, or can be taken alone. For local application a paint may be made by dissolving a little of the purified turpentine in ether.—Mr. E. S. Kelly, in *New Remedies.* December, 1880.

Treatment of Ileus by Massage.—M. Busch gives, in *Wratsch.*, No. 21, 1880, the details of four cases of ileus treated successfully by massage. Three were cases of intussusception; the fourth was a case of enormous fæcal accumulation, due to a stricture situated at the ileo-cæcal valve. In all four, opiates and enemata, and other remedies had been used, but with no relief. The author advises that, in such conditions, massage should be resorted to. In cases of obstruction from stricture, the manipulations should be made in such a direction as to follow the course of the intestine; when this cannot be discovered, however, and in all cases of intussusception, the manipulations should be directed from the borders of the tumour and away from it, towards each side, the accumulated fæces being by this means pressed aside in one direction, while the intussusception is relieved in the other.—*Cbl. f. Chir.* No. 48. 1880.

Salicylate of Soda causing Impotence.—Dr. Dubrisay has observed that the administration of salicylate of soda is frequently followed by impotence. In three cases this was complete, but only temporary, and was induced by a dose of 3 to 4 grammes within twenty-four hours. This effect of the remedy has heretofore remained unnoticed, but should now be carefully watched. There is also a chance of its being taken unwittingly, as many articles of food and drink, such as beer, wine, canned fruits, vegetables, &c., are preserved with the aid of salicylic acid or its sodium salt.—*New Remedies.* December, 1880.

Changes in the Spinal Cord after Amputation.— A. Erlitzky (*St. Petersburger Med. Wochenschrift,* Nos. 5 and 6, 1880), examined the spinal cord in four dogs which two years before had undergone amputation above the knee, and reports the following observations :—

1. In dogs which were full grown when operated on no change was noticeable in the cord. In dogs which were only three weeks old when operated on, however, most marked changes were seen, especially in that portion of the cord from or to which the nerves of the amputated extremity proceeded.

2. These changes consisted in a diminution of the circumference of the posterior nerve roots, of the posterior columns, and posterior horns, and in diminution in number and size of certain nerve cells in the anterior horns of the same side.

3. The diminution in volume appeared in the form of a simple atrophy of the nervous elements; there was no trace of

more complicated pathological change.—*Cbl. f. Chir.* No. 49. 1880.

Ointment for Chronic or Subacute Gout or Rheumatism.—Dr. Lenoble prescribes the following ointment in cases of the above nature :—Equal parts of finely powdered gamboge, myrrh, cannella, and salicylate of soda, with a sufficiency of essence of turpentine to bring the whole to a fluid consistence. This should be rubbed in vigorously three times a day. The same preparation is serviceable in stitch in the side which resists ordinary treatment, and in old standing or recent neuralgias, when the first days of acuteness have passed.—(*Rev. de Thérap. Med.-Chir.,* 1879). *Bull. Gén. de Thérap.* 30th October, 1880.

Treatment of Nervous Palpitation of the Heart by the " Congestive Attitude."—Dr. Bauchut states that by the assumption of what he terms the " congestive attitude," nervous palpitations, not dependent on organic disease of the heart, may be instantly arrested. His directions are these :— The patient stands erect, fixes his lower limbs, and then stoops over rapidly in such a way as to touch his toes with the tips of his fingers. The head thus falls forward, and its vessels are at once rendered turgid. If the hand be now placed on the cardiac region it will be found that the palpitation has ceased, the disordered impulse being replaced by a regular and rhythmical beat, which indicates that the organ has resumed its normal action. It is obvious that this treatment is not applicable to the case of the aged or those who indulge in alcohol, or in short those in whom the integrity of the arterial or venous system is doubtful.—(*Le Médicin Praticien.*) *Lyon Médical.* 19th December, 1880.

Elimination of Iron.—E. W. Hamburger shows (*Zeitschr. f. Phys. Chemie,* iv, p. 248), in some experiments made on dogs with biliary fistulæ, that while the normal excretion of iron through the liver is but trifling, it is in no way increased even by the free administration of iron. This remedy is eliminated much more freely by the urine than by the bile.—*Cbl. f. d. Med. Wiss.* No. 45. 1880.

Bromide of Ethyl as a Local Anæsthetic.—M. Terrillon states that the bromide of ethyl has many advantages over ordinary sulphuric ether, and, indeed, over most other fluids proposed as local anæsthetics.

1. It may be used at night, by artificial light, without fear of fire, its vapour being non-inflammable.

2. Its odour is not of a penetrating nature.

3. A smaller quantity of it than of ether will suffice for complete anæsthesia.

4. It has no irritant effect on wounds, so that the pain felt when sensation returns is comparatively trifling.

5. It does not cause the formation of a crust of ice on the frozen part.

6. It permits the use of the thermocautery.

The tissues are frozen in two to three minutes; the thermo-meter subjected to the spray for an equal time indicates a temperature of $-15°$ C.   Bromide of ethyl has a sp. gr. of 1·4, and boils at 40·7° C., is easily prepared, and is stable.   The author has used it in very many cases, with the best results.— (*Bull. Gén de Thérap.*)   *Cbl. f. Chir.*   No. 44.   1880.

Parasitic Hæmoptysis : Gregarinosis Pulmonum.— Under this name there is described, by Professor E. Baelz, a variety of lung disease, associated with hæmoptysis, very prevalent in Japan.   It has nothing to do with phthisis or any lung change demonstrable by physical examination. Patients suffering from it show almost no symptoms of disease, except occasional itching and slight cough.   It occurs only in men, usually between the ages of 15 and 25.   The sputum is dirty red in colour, and very tough.   The colour is due chiefly to the blood present, but is greatly modified by the presence of a specific parasite.   This parasite appears in two forms :—1. As intensely yellowish-brown, egg-shaped bodies, 0·13 mm. in length, and 0·07 mm. in breadth, having a transparent investing membrane, 0·02 mm. thick, which shows a sharply defined, double outline.   At the larger end is an opening.   These "eggs" contain a tough jelly-like sub-stance, in which are embedded 3 to 5 rounded masses, each of which consists of (*a*) a sharply defined, colourless globular body, twice the size of a white blood corpuscle, whose contents are in constant movement; round these masses is seen (*b*) a coarsely granular, yellow substance, in which molecular movement is often noticeable.   2. These ball-shaped masses have the same appearance as the innumerable granular, rounded or oval, colourless or yellowish-brown blood corpuscles, 0·01 to 0·04 mm. in diameter, which often form the principal part of the sputum.

The large egg-shaped bodies are psorospermic cysts, the smaller ball-shaped bodies young psorosperms, exactly similar to those figured by Waldenburg and Eimer, and obtained by

them from the intestine and liver of mice and rabbits. As psorosperms are generally admitted to represent simply a stage in the development of gregarinidæ,, the author names the disease *gregarinosis pulmonum*, and the parasite *gregarina pulmonalis;* or, on account of its colour, *gregarina fusca.*— *Cbl. f. d. Med. Wiss.* No.. 39. 1880.

Chloral Hydrate in Toothache and Faceache.—C. Spörer states that toothache may often be relieved by the local use of hydrate of chloral in substance. Three or four small pieces, weighing ·03 to ·06 of a gramme should be wrapped in cotton wool, and placed in the cavity of the tooth, to remain there till dissolved. Having treated 38 patients in this way, he is in a position to recommend the remedy in the above mentioned affections, and also in hemicrania dependent on carious teeth.—(*St. Petersburger Med. Wochenschrift.*) *Cbl. f. Chir.* No. 50. 1880.

On the Diagnosis and Treatment of Phthisis.—In a paper read before the Philadelphia County Medical Society, Dr. Carl Seiler draws attention to certain diagnostic changes taking place in the larynx in the earlier and later stages of phthisis. He states that the mucous membrane of the larynx gives a positive index to the state of the lungs, even when percussion and auscultation give negative results. The changes in colour and shape of the larynx are quite characteristic. They are, first, a peculiar ashy-grey discoloration of the mucous membrane of the pharynx and larynx, quite different from that of anæmia; secondly, a peculiar swelling of certain parts of the larynx, especially of the arytenoid cartilages and epiglottis, differing materially from ordinary œdema. The arytenoid cartilages, on one or both sides, assume a pear-shape, the largest amount of swelling being near the inter-arytenoid commissure, and usually on the side where the lung is most affected. Less frequently there is a turban-like swelling of the crest of the epiglottis, which at the same time assumes a horse-shoe bend. Dr. Seiler states that the swelling of the arytenoid cartilages may exist prior to affection of the lung, but that when there is an affection of the epiglottis, the lung has certainly commenced to break down. In the diagnosis of the earliest stages of phthisis he lays great stress on the pitch of the percussion note. As regards treatment, he advocates slightly stimulant inhalations, the inhalation being effected by deep inspirations.—*St. Louis Courier of Medicine.* August, 1880.—G. S. M.

Complete Extirpation of the Larynx, &c.—Another of those formidable operations has been performed by Professor A. Caselli, of Bologna; it is reported at length in *Dal Bulletino delle Scienze Mediche di Bologna*, February, 1880. The parts removed in this instance included the larynx, pharynx, base of the tongue, velum of the palate, and the tonsils. The patient, a girl of 19 years of age, had suffered for about a year from an extensive growth involving the parts just mentioned, which ultimately rendered deglutition and respiration so difficult and painful, that Dr. Caselli determined to operate. The first step in the operation was the performance of tracheotomy; the third, fourth, and fifth tracheal rings were divided with the galvano-cautery knife, and Trendelenburg's tampon-cannula was introduced through the opening so made. The patient having then been placed with her head hanging over the end of the table, an incision was made with the galvano-cautery knife, from the upper angle of the tracheal wound to the margin of the lower jaw; the muscles were drawn carefully to one side, the thyroid gland pushed downwards, and the thyroid and cricoid cartilages exposed. With two galvano-cautery wires the larynx was then separated from the hyoid bone; its connection with the trachea was severed partly with an ordinary knife and partly with the galvano-cautery, the upper extremity of the windpipe being fixed by means of two silk threads. The hyoid bone was next sawn through in the middle line, and the pharynx separated laterally and behind. The œsophagus, after being secured with loops of cord to prevent retraction, was divided at the level of the fifth cervical vertebra by means of the galvano-cautery wire. The remainder of the operation was performed through the mouth; the whole of the soft palate, the pharynx as high as the posterior nares, the tonsils and the pillars of the fauces were detached, and the whole mass, including the entire new growth, was removed through the wound in the neck. The operation lasted three hours and ten minutes; only three ligatures were needed, the galvano-cautery having prevented much bleeding. The two halves of the hyoid bone were then brought together with a catgut suture; below the hyoid bone a tube was passed into the œsophagus, and the wound in the skin was closed and dressed antiseptically. Immediately after the operation the patient could freely put out her tongue. The principal difficulty encountered in the operation was in separating the larynx from the carotid and vagus, and in avoiding the internal carotid while removing the tonsils. The author describes the tumour as a "lymphatic granuloma." The

subsequent progress of the case was in all respects favourable. In a month the patient could swallow fluid and semi-solid substances, the act of deglutition being nearly normal in character, although the whole of the pharynx, from the level of the posterior nares to the fifth cervical vertebra, was removed; this the author thinks due to the fact that the œsophagus was drawn powerfully upwards by cicatricial contraction. The patient wore a Gussenbauer's artificial larynx, modified by Caselli.—*Centralblatt f. Chirurg.* 12th June, 1880.

The Substitution of a Lead Plate for a Portion of the Frontal Bone.—Dr. M. H. Post, St. Louis, reports a unique case, in which a depression in the forehead, $\frac{1}{4}$ inch deep, $\frac{3}{4}$ inch in transverse, and $\frac{5}{8}$ inch in vertical diameter, caused by syphilitic necrosis of the frontal bone, was successfully filled up with a plate of lead. The patient, a female, insisted on something being done to remove the deformity, and lead was selected, as the tolerance of bullets in the body seemed to teach that lead is innocuous, while it is cheaper than silver, and may be cut into any shape. A horizontal incision was made through the middle of the cicatrix ; the cicatricial tissue, which was firmly adherent, was carefully dissected from the bone, the lead plate (weighing a drachm and a half) was slipped in, and the incision then sewed up. The wound was dressed with cold water dressings. A considerable amount of serum was effused, which was twice drawn off by the hypodermic syringe, but the case progressed favourably. A bandage was worn for some time to fix the plate, and to relieve the sense of weight which it produced. Dr. Post particularly notes that—(1) the plate lies on the bone ; (2) it is covered by cicatricial tissue which (3) is not more than $\frac{1}{16}$ inch thick. Twelve months afterwards, the plate was in place, giving no trouble, and "filling its purpose so well that I found myself examining the wrong portion of the forehead."—*St. Louis Courier of Medicine.* August, 1880.—G. S. M.

Hydrophobia.—In the prolonged discussion on hydrophobia, which recently took place at a meeting of the French Academy of Medicine, M. Hardy stated that, in the case he related, the first symptoms of the disease were suddenly developed immediately after the patient had undergone violent muscular exertion. The difference in the period of incubation in men and dogs was also shown. A dog, which had been bitten at the same time as M. Hardy's

patient, showed signs of disease at the end of two months, while four months passed before the man became ill. Great importance was attached to the use of the constant electric current in treatment. In the case referred to, the œsophageal spasm was so far controlled by this means that for several hours the patient could swallow fluids easily.—(*Bull. de l'Acad. de Médicine.*) *Cbl. f. Chirurg.* 13th November, 1880.

Midwifery Statistics.—Mr. Legge, of Derby, gives the results of a thousand consecutive cases of labour, with some sensible remarks thereupon. He believes that the forceps should be used early if a low mortality is to be secured, and that turning should never be had recourse to until the forceps has had a fair trial. He considers that the actual mortality amongst lying-in women is about 7 in 1,000, but that it might and ought to be reduced to 5.—*Obst. Jour.* September, 1880. —W. L. R.

Extra-Uterine Pregnancy.—Dr. Lawson Tait gives his third case treated by abdominal section. Eight or ten weeks after ceasing to menstruate, the patient had an attack of peritonitis. After this she suffered from more or less constant pain, and her general health became poorer, till, at the end of the eighth month, her distress was so great as to render operation necessary. Under ether the child was removed alive, by median incision. The cyst was in the right broad ligament, and its edges were fixed to those of the parietal wound and the placenta left. The patient died from shock on the fourth day. The child is thriving.

Mr. Fulcher, of Burbage, relates two cases. In one, death resulted at the fifth month from hæmorrhage into the cavity of the peritoneum, caused by accidental detachment of the placenta which had been fixed to the abdominal wall. In the second case no special symptom showed itself till about the full time, when severe abdominal pain and sickness came on, and continued for twenty days, when she died. *Post-mortem* section revealed a very large child lying across the brim of the pelvis, with the placenta attached in the left iliac fossa.

The details of a fourth case are given by Mr. A. Francis, of Delaware, Canada. About the third month the patient had an attack of peritonitis, from which she recovered in a few days. When near the full time she had another attack of a much more severe description. After this there was no movement felt, the breasts dried up, the abdomen got less, and the fœtus seemed to fall to the lowest side as she turned in bed.

Six weeks afterwards, pain and hæmorrhage from the vagina set in, followed in a day or two by vomiting and diarrhœa, which ended rapidly in death. A full grown fœtus was found, and the placenta, which was very large, was attached to the bladder and uterus.—*Obst. Jour.* October, 1880.—W. L. R.

Multiple Vesical Calculi, the Sequel of Prolapsus Uteri. —Dr. Galabin has lately shown, to the Obstetrical Society of London, twelve large and fifty small stones, removed by vaginal lithotomy, from the bladder of a woman whose uterus and bladder had been prolapsed for seventeen years. After the operation the parts were replaced in the cavity of the pelvis and the patient soon regained the use of her bladder. The calculi consisted of uric acid covered with a film of phosphates. —*Obstet. Jour.* May, 1880.—W. L. R.

Excision of Sub-Peritoneal Fibroid.—Dr. Godson reports a case of successful removal of a sub-peritoneal fibroid by abdominal section. Spencer Wells performed the operation. The pedicle was accidentally torn through, but as no bleeding took place it was left without a ligature. The patient recovered without a bad symptom.—*Obstet. Jour.* May, 1880.— W. L. R.

Purpura Hæmorrhagica Cured by Ergot.—A man, æt. 25, was admitted under the care of M. Lasègue, Paris, who had been affected for eight months with extreme *purpura hœmorrhagica.* He had frequent attacks of bleeding from the nose and ears, and had twice been affected with right hemiplegia. No cause could be assigned unless possibly alcoholism. The regular administration of iron had produced no effect. On admission, he was put on ergot of rye—1 gramme (about 15 grs.) *per diem.* From the first he rapidly improved. In a short time the paralysis passed off, the petechiæ disappeared, and the hæmorrhage ceased. He was soon able to return to his work as a gardener.—*Gazette des Hôpitaux.* 4th September, 1880.—J. W. A.

Toxicological Action of Bromide of Ethyl.—Dr. Isaac Ott thus concludes a paper on the toxicological action of this new anæsthetic agent:—

1. Bromide of ethyl (hydrobromic ether), by either inhalation or subcutaneous use, kills by a toxic action on the centre of respiration.

2. The decrease of force and frequency of the heart's action contributes to the paralysis of the respiratory centres.

3. Injections of bromide of ethyl into the jugular vein, toward the heart, kill by cardiac arrest, probably by action on the cardiac muscle.

4. Bromide of ethyl, in toxic doses, depresses momentarily the frequency of the heart's action, but this is followed by a subsequent permanent rise to the normal rate.

5. Bromide of ethyl, in toxic doses, depresses the arterial tension steadily, this being due, in major part, to the depressant action of the drug on the heart, and in minor part to a partial loss of tone of either the spinal vaso-motor centres, or the peripheral vaso-motor system.

6. The inhibitory power of the pneumogastric nerve is not paralysed.—*Detroit Lancet.*   June, 1880.

Second Attacks of Constitutional Syphilis.—At a meeting of the Medico-Chirurgical Society of Louisville, in March, Drs. Yandell and Holloway each reported a case of this nature, the primary attack being characterised by well marked hard chancre, followed by syphilitic rash and other symptoms, and the second by an equally pronounced chancre. These were the first cases that either had seen in the course of a tolerably long practice, but they referred to others observed by Jonathan Hutchinson and Ricord.—*The Louisville Medical Record.*   April, 1880.—G. S. M.

Treatment of Burns.—Nitsche recommends that burns should be treated in the following way :—The burnt surface, having been first carefully disinfected with a 2 per cent solution of carbolic acid, is painted over with a thick varnish made with linseed oil, litharge, and 5 per cent of salicylic acid. The varnish must be heated before the acid is added to it ; it must also be heated each time it is used.   When the first coat of varnish has dried, a second is applied over it, and over all a layer of cotton wool kept in place by an elastic bandage.   In most cases healing takes place under this dressing.   Should suppuration occur under it, which is indicated by fever and local tenderness, the wadding is taken off and the varnish removed from the whole extent of the suppurating surface, over which dry salicylic acid is powdered ; the wadding is then replaced.   This dressing causes very little pain, and the resulting cicatrices are very soft, smooth, and regular.—*Cbl. f. Chir.*   No. 49.   1880.

ORIGINAL ARTICLES.

ON SOME MEDICAL COMPLICATIONS OF SURGICAL PRACTICE.

By HECTOR C. CAMERON, M.D.,

Surgeon and Lecturer on Surgery in Glasgow Royal Infirmary.

Being his Introductory Address as President of the Pathological and Clinical Society of Glasgow.

GENTLEMEN,—My first duty is to thank you very sincerely for the honour conferred upon me by my election as your President. He best, and most easily, returns his thanks for such a distinction who is able to feel—however well he may disguise the feeling—that it is not altogether undeserved; but, on the present occasion, I am not aided by any such complacent reflection. I know that there are many others in the Society who, by reason of seniority, professional position, and the work they have accomplished, both in clinical study and pathological research, might well have been elected to its highest office before myself. I may, however, express the hope that, during my tenure of the chair, the meetings of the Society will be as pleasantly conducted, and as distinguished for the high character of the work accomplished, as have been the many meetings held under the guidance of my predecessors.

I have, in the next place, to address myself to the task of bringing forward the first communication of the session; and I have elected to read to you some clinical experiences of medical complications which arise in the course of surgical practice. By this, I would have you understand, I do not

refer to the more usual and obvious complications of injury, but rather to a few well known medical diseases which are developed every now and again as a direct result of accident or operation, which follow so quickly and so often in the wake of the surgeon's work and duty, that experience has now abundantly established the fact of their companionship, although there seems no other very good reason why such association should be anticipated or looked for.

The first disease of the kind which I shall mention is traumatic delirium tremens; and I put it first because it has long been recognised as a frequent outcome of injury, and because, also, it is more or less typical of the class to which it belongs. The essential element in the causation of traumatic delirium is the habit of drunkenness; and although our knowledge of the exact pathology of the disease is almost nil, it seems fair to assume that it owes its existence mainly to a deteriorated, changed, and vitiated state of the nervous system, and probably also of the blood. No isolated debauch or single act of drunkenness is capable of giving rise to it, no matter how severe a shock may at the time be sustained. Indeed, surgical practice illustrates this fact in a very remarkable way; since the state of drunkenness, so far from prejudicing the chances of recovery of an injured man, is often his greatest protection, and I have frequently, under these circumstances, witnessed most severe and cruel bodily laceration with a surprising absence of the surgical shock which might naturally have been expected.   Take as an example the following case:—

C. M., aged 40, was found on the morning of Sunday, 15th Oct. 1876, lying on a railway, about fifteen miles from Glasgow, with one of his legs torn off, and the other hanging by a few shreds of skin and muscle. He had been turned out of a public house in the neighbourhood on the previous night, and a train afterwards passed over the line.   This knocked him down, and he lay there throughout a dark, inclement night in the middle of October, until found by churchgoers walking along the line in the morning.   He was brought with as little delay as possible to the Royal Infirmary, where I saw him shortly after admission.   I separated the remaining limb with the ward scissors, applied antiseptic dressings to the shattered stumps, and had him placed in bed. Brandy was administered, and hot bottles put to his body.   On the following morning, chloroform having been administered, I amputated both his thighs (lower third).   His wounds pursued throughout an aseptic course, and he made an uninterrupted recovery with-

out fever or delirium.   A successful double primary amputa-
tion of the thigh is an occurrence of great rarity; since a
patient who must be submitted to so desperate a measure is
already always well-nigh dead from surgical shock.   But in
this man's case, while fortunately there had been no excessive
hæmorrhage, neither was there the extreme shock one might
have expected.   " When in swinish sleep, his drenched nature
lay, as in a death " on the railway, alcohol, no doubt, by dulling
both mental and physical pain, performed for him very much
the same kind office as chloroform did when, sixteen hours
after, he was submitted to a double amputation of the thigh.
The one anæsthetic lessened the shock of the original injury,
the other that of the operation.

Although the system may be thus occasionally guarded
from the worst effects of injury, by being at the time under
the influence of alcohol, the case is very far otherwise, as
we all know, when the operation or accident concerns a
habitually intemperate man.   It then too often determines
that an attack of that peculiar delirium—with its incoherent
loquacity, its spectral illusions, its business concerns and
anxieties, its complete forgetfulness of the injury and disregard
of the pain—which, as an idiopathic affection is well known
to the physicians, shall at once supervene and imperil the
patient's recovery.   His system is ripe for the disease; it
needs but the stroke of injury to determine that it shall occur
now and at once.   Let him but avoid the injury and the
attack is presumably delayed, possibly entirely escaped.

These facts are familiar to all of us, but the occurrence of
attacks of the various forms of insanity in the same sort of
manner, in constitutions probably always predisposed to it, is
a fact by no means so generally well known.   Those, however,
who come into contact with large numbers of surgical patients
will not have very long to wait for illustrations of it, if their
attention be directed to the subject.   During the six years
in which I have had charge of surgical wards in the Glasgow
Royal Infirmary, I have had under my care three well marked
cases of what may be called traumatic or surgical insanity.

1. In the spring of 1877 a middle-aged man, a groom, was
admitted with a simple fracture of the left humerus, which
had been caused two or three days previously by the kick of a
horse.   Nothing peculiar was observed in his demeanour on
admission, except that he was, perhaps, unnaturally silent.
He spoke seldom, but when he did, always in an excited
manner—detailing boastful and evidently untruthful incidents
in regard to the important positions he had held in various

extensive hunting stables. He spoke of great racing events in which he had played the part of victorious jockey, and freely intermixed all such tales with the names of well known noblemen and gentlemen with whom his occupation, he said, brought him into intimate contact. He also showed a constant forgetfulness of the fact that his arm was fractured, and a complete disregard of the physical pain which frequent movement of it might have been expected to entail. I naturally concluded that his case was one of traumatic delirium. I ordered repeated doses of bromide of potassium, and directed that the limb should be securely fixed by means of plaster of Paris from the shoulder to the tips of the fingers. We soon learned, however, on inquiry of his friends, that he was a man of regular and strictly temperate habits, but that he had on one previous occasion been "out of his mind," and had been treated for some time in a lunatic asylum. The new light thrown by this information on his mental condition was verified by the progress of the case. His insanity became more confirmed during the three or four weeks of his residence in hospital, and latterly he required constant watching, although he never became obstreporous or violent. When his humerus was pretty firmly united, he was examined by competent medical men, and, on their certificate, transferred to an asylum.

2. In April 1878, a young woman, aged 28, was admitted into one of the medical wards on account of cystitis. On examination it was discovered that the bladder contained a calculus, and she was transferred to my female ward on the 15th of that month. She suffered great pain, which came in paroxysms, sometimes of frequent recurrence, and accompanied by straining and "bearing down." The urine was deeply tinged with blood. On the 16th the house surgeon has entered in the ward journal the following note, " Looks hysterical, and will seldom answer questions put to her. Ordered 30 grains of the bromide of potassium every three hours, which, however, she cannot be induced to take." I thought it well to delay surgical interference until this nervous state passed off. With my present knowledge, I should have arrived at another conclusion. She was sleepless and much pained during the night of the 16th, and continued so all the next day. She became somewhat excited, and was removed to the side room of the ward. During the night of the 17th her pains suddenly increased in violence until they assumed very much the character of labour pains, and coincidently with this she became alarmingly maniacal. Four attendants were with her all night; she struggled and screamed perpetually; thought

attempts were being made to kill her; and strove constantly to reach the window, in order to throw herself over. In the morning she was more composed; was dull, quiet, and sulky-looking, wearing also an appearance of stupor and exhaustion. She was seen by a parochial surgeon, who arranged for her removal to an asylum. Her mental condition, however, continued to improve, and what surprised me more, her bladder symptoms almost at once disappeared. She now told one of the nurses that she had passed the stone during her struggles, that she had had it in her hand, that it was oval in shape and not very large in size, but what had become of it she could not tell. A subsequent examination of the bladder failed to discover its presence, and I have no doubt her statement of having passed it was quite accurate. It must have been removed with the sheets from her bed, which were saturated with urine and torn by her violence. Owing to the steady improvement in her condition, her friends removed her to the country, where she quickly recovered, and is at present in good mental and bodily health. Eight years before the occurrence I have described—*i. e.*, when twenty years of age—she was for a time insane, and was, during several months, an inmate of a lunatic asylum.

3. In November of last year an elderly man was admitted into my accident ward with a simple fracture of both bones of the leg. In a few days his manner was observed to be peculiar. He was quiet, shy, and suspicious. As time passed his mental condition became more and more the subject of remark. At last he began to express great dread that the other patients in the ward had designs on his life, and was always terrified and unhappy unless a nurse was seated by his bed. One day, when I myself happened to be in the ward, on the sudden entrance of a stranger, he gave a scream, jumped out of bed and rushed to the window. The house surgeon and myself were just in time to prevent him throwing himself out, and we required assistance to get him back to bed. From this date he became troublesome and had to be removed to an asylum. He had never before been insane, but one of his fellow-workmen told us he had always been considered " daft and queer." I have knowledge of other two cases of insanity which occurred in the practice of friends, apparently as the immediate result of operation; and I refer to them with their permission. One was that of a woman, fifty-five years of age, on whom my colleague, Dr. Macewen, operated for strangulated umbilical hernia. An attack of acute and very violent mania followed shortly, and necessitated her removal to an asylum. She had

previously been insane. The other case is that of a lady, operated on by Dr. George Buchanan for scirrhus of the mamma. The operation was followed by such mental disturbance as required her removal to Gartnavel Asylum before the wound was healed. She, also, had on a previous occasion been in confinement.

Cases such as these at once suggest to the mind the better known and longer recognised relationship between parturition and consequent attacks of mental alienation.* Sir James Paget refers to this in his essay on "The various risks of Operation." "Very rarely," he says, "patients become insane after operations or accidental injuries, just as women do after parturition. I long thought that the absence of anything like a parallel to puerperal mania was one of the few points in which the consequences of operation differ widely from those of parturition, with which in many important characters you know that they closely agree. But, within the last few years, I have seen cases in which the parallel seemed to be completed. In one such case, within two days after a compound fracture of the leg, an elderly woman who had never shown signs of insanity, became 'maniacal with merriment and sleeplessness, the broken limb having apparently little influence upon her state. In another case of compound fracture, the patient became insane within a few days of the injury, and remained so till nearly the time of her complete recovery. I have known a case in which religious mania ensued quickly after lithotomy; another in which melancholia followed an otherwise successful lithotrity, and another in which fatal acute mania followed erysipelas after a minor operation. Such events are, however, so rare that they need in no way interfere with the judgment which you would form as to the propriety of any operation. Only under the strongest probability of insanity ensuing after it, would the fear justify one in dissuading a patient from that which might be necessary for his health or life."

Obstetricians, in attempting to solve the problem why women should be apt sometimes to develop insanity in connection with childbirth, have sought the explanation very much in supposed peculiarities of the maternal state. Thus, it has been held that it depends upon some form of septicæmia; or (as Simpson and Donkin have insisted) from the

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* The second case detailed above seems to me an exact analogue of that brief, transitory form of puerperal mania which occurs during labour, subsiding often on its completion, and which has received the name of "the delirium of labour."

fact that albumen is sometimes found in the urine, that it is in reality like eclampsia, an example of uræmic blood poisoning. If it be true, however, that the surgical variety of the disorder is in any real sense the analogue of the puerperal, it seems to me that such speculations lose a good deal of their force, since in the former case, at all events, the conditions under which septicæmia or uræmia may be expected to be encountered are often entirely absent. The most that can be said is, that insanity may at any time supervene, especially in those predisposed to its attacks, as a consequence of the shock, slight as that may often be, which is communicated to the system by the act of parturition, or by surgical operation, or injury.

Gout and rheumatism are both diseases often developed in a striking way in surgical patients. In saying this, I do not merely mean to affirm that the injury of a limb or joint in a gouty or rheumatic patient may ultimately assume a character in keeping with the constitutional peculiarity of the individual. This is, no doubt, strictly true, and in accordance with clinical experience. Thus, a medical man lately told me that he had a patient who, if he wore a new and tight boot for a day, always paid the penalty by getting an attack of gout in the irritated foot ; and I saw in summer the same sort of fact illustrated in the case of a patient who, having had a small cystic tumour removed from the upper and inner part of his foot, suffered a consequent attack of gouty inflammation in the great toe and foot, which confined him to the house for many weeks. But an explosion of gout may also take place as the immediate consequence of an accident, its manifestation being developed in parts remote from the seat of injury. This fact is not one which we in Glasgow have many opportunities of observing. Amongst our hospital patients, in whose cases we chiefly study the effects of injury, the disease may be said to be unknown. But I have once, in private practice, met with a good illustration of the fact.

Five years ago, I saw a middle-aged gentleman, who had fallen on the palm of his hand from a height of a few feet. He had been seen, in the first instance, by Dr. J. Wallace Anderson, who, finding that he had sustained a severe sprain of the wrist, fixed the hand and forearm on an anterior splint, and applied fomentations. After the lapse of a very few days —I cannot precisely recollect how many—he was seized with a most typical and painful fit of the gout in the great toe of his left foot, which confined him for some time to bed. He had never suffered from gout before, but told us that his father

was a martyr to the disease.   He has himself, I believe, more recently passed through a second attack, arising without any such obvious exciting cause as on the first occasion.   On this subject, also, I may quote from Paget's writings, "People thus combustible," he says, "are not rare; you may liken them to lucifer matches; gout explodes in them whenever they are roughly injured.   It may appear localised either in the injured part or in any other; for the effect of the injury may be two-fold; it disturbs the nutrition of the part on which it is inflicted, and, in a less degree, and consequently, it may disturb the general health, and thus induce the occurrence of gout and its localisation in some part even more apt for it than that which is injured.   Hence, you may meet with two different groups of cases.   In the one you find men, whom you may suppose to have been just ready for a seemingly spontaneous attack of gout, who casually hurt their feet or their hands, or wrench one of their joints, and in a few hours, or in a day or two, the gout appears at the injured part.   In the other group are those who are injured in some part not usually apt for gouty inflammation, and in whom, while they are not yet recovered from the injury, gout appears in some distant part. Among them you may have to count some of those on whom you have operated.   Your surgical injury, together with the associated mental disturbance, will have sufficed to let appear the gout, which might else have been repressed or healthily concealed.   I have known a patient suffer a sharp attack of gout after each of three operations which he has undergone."

When we come to examine into the occurrence of rheumatism in connection with surgical practice, we are met with a pre-liminary difficulty from the fact that the word "rheumatism" is used in a vague and uncertain way, and includes, or rather, is often made to include, diseases having widely different origins and very different pathological characters.   Leaving altogether out of sight well marked examples of pyæmia, in which the joints are the seat of inflammatory mischief (for in such cases there is no ground for a mistaken diagnosis or a difference of opinion), there are, at least, four varieties of ailment met with in surgical practice, all of which are apt to be called "rheumatism," while only one of the four is, I believe, really the disease known to physicians as acute arti-cular rheumatism or rheumatic fever.   Let me detail the chief features of a case which illustrates the occurrence of one of these so-called "rheumatisms."

A medical man, with a scratch on his little finger, apparently got it poisoned while dressing a septic wound, the result of a

scald. The illness was ushered in by pain in the finger, chilliness, shivering, and high fever. An incision was early made into the swollen and tender spot, and some pus evacuated. Still the pain continued, and soon the lymphatics of the arm showed signs of inflammation, an abscess ultimately forming in the axilla. The little subcutaneous bursæ over the phalangeal joints of the affected finger, which were everywhere very tumid and swollen, also became filled with pus. These were opened as they became tense, and the axillary abscess was evacuated. Still, improvement was only slowly manifested; and the last phalangeal joint was discovered to be disorganised, a grating of the two little bones being easily perceived on the slightest movement. So far, the description of this case is that of an ordinary poisoned wound of no very unwonted severity. But just when the finger and arm appeared to be progressing satisfactorily towards recovery, a new feature arose in the case. Sharp pain was experienced first in one knee and then in the other; effusion of fluid followed quickly in both joints, and along with this new complication there was a marked rise of temperature. Soon other joints became affected in rapid succession, until the wrists, elbows, shoulders, knees, and ankles, were all more or less painful, stiff, and swollen. The small joints of the hands and feet were especially the seats of swelling and sharp pain. In none, however, was effusion to be detected except in the knees. No rigors took place, but there were frequent sweatings. The constitutional symptoms were never very severe; but the pain was often very unbearable. Sleeplessness was a prominent feature throughout this stage of the illness. Improvement and relapse occurred in the course of this rheumatoid attack, with provoking alternation, during very many weeks; and even now, after the lapse of more than six months from the commencement of his illness, the patient can hardly be said to have entirely recovered. Such an attack as that here detailed forcibly calls up to one's mind the disease known as gonorrhœal rheumatism; and there seems no very good ground for supposing, but quite the contrary, that either the one or the other, has anything in common with acute articular rheumatism. Gonorrhœal rheumatism has been observed to affect all the articulations, but seems to be most frequent and most obstinate in the knees and the smaller joints of the extremities. The accompanying fever is not usually great, while chills and rigors are seldom complained of. The pain is often extreme, and effusion takes place rapidly, and sometimes, especially in the knees, in great quantity. In certain cases, the subcutaneous bursæ and the bursal sheaths

of tendons are the seats of effusion as well as the joints. Treatment produces little or no effect; the disease, when severe, is always very chronic, and marked throughout by a disposition to occasional amendments, followed by disappointing relapses. So far, the parallel between the two kinds of cases is very exact; and it is not surely assuming too much to say that in both cases, the articular affection is probably excited by the absorption into the system of some form of septic poison. Fatal pyæmia follows every now and again upon poisoned wounds, as it does upon attacks of gonorrhœa,* and it is not, therefore, matter for surprise that mischief of a less serious but analogous character should also, in other cases, be developed.

Another very interesting and very serious form of rheumatoid disease, often encountered by surgeons, is that which occurs in connection with acute necrosis of the long bones. The disease begins in the periosteum, being an acute, phlegmonous periostitis; sometimes it partakes of the characters of an osteo-myelitis; very commonly, I imagine, it is an inflammation of the bone, its membranes and its marrow. The patient is always a child; the immediately exciting cause usually a trivial injury. The result is large abscess and extensive necrosis; while, along with these, there is often pain and swelling in several joints, and well marked pericarditis. Intense suffering and great constitutional disturbance are characteristics of the disease; alarmingly high temperature, thirst, restlessness, and delirium being early manifested. But I shall best explain what I mean by narrating one or two cases.†

* Two cases of pyæmia, arising from gonorrhœa, have come under my own observation. In the first of these, occurring in a gentleman of middle age, recovery only took place after a long continued and most serious illness, accompanied by the formation of several large abscesses in thigh, testicle, and foot. In the second case a fatal result occurred. A young man was admitted a few years ago into my ward with retention of urine, caused by an acute gonorrhœa. The house surgeon relieved him by the use of the catheter. A few days afterwards, he complained of "rheumatism" in several joints, and, under the belief that it was a case of gonorrhœal rheumatism, he was received into one of the medical wards, under the care of Professor Charteris. The case developed into one of acute and rapidly fatal pyæmia. On *post-mortem* examination, numerous abscesses were found in the joints, in the sterno-mastoid muscle of one side, and in the lungs. The urethra was entirely uninjured by the catheterism, and showed no lesion except the urethritis.

† Since writing the above, my attention has been directed to a paper by Dr. Bristowe, on "Cases of Acute Necrosis, Complicated by Pyæmia, with remarks" (*Transactions of the Pathological Society of London*, vol. xiii, p. 188), from which I may quote the following sentences:—"That the

CASE I.—A few weeks ago I was asked to see a little boy, four years of age, who was under the care of Dr. Grainger, of Dowanhill. On the 28th of August last, this child fell upon his right knee, but no special complaint was made of it until the following day, when he began to suffer pain. He also was feverish and ill, and all the large joints of the body became painful and swollen. The left foot and right thigh were the seats of a diffuse and general swelling. On the third day he appeared to Dr. Grainger to have all the symptoms of acute rheumatism. Præcordial pain was complained of, and a murmur was present, most distinctly audible over the apex of the heart. The swelling of the thigh continued to increase, and about the fourteenth day after the commencement of the illness, it became evident that it was the seat of a large abscess. I saw him two days after this. The joints, which had been painful and swollen, had almost returned to their natural condition, although the child still looked very ill and was very feverish. The right thigh was distended by an abscess throughout its entire extent. It was opened, under chloroform, with antiseptic precautions, and, on introducing my finger through the incision, I found, as I had anticipated, that almost the entire shaft of the femur had necrosed. The patient has, up to the present time, progressed favourably; the abscess cavity remaining aseptic, the general health being comparatively good, and the discharge slight in amount and serous in character. The dead shaft of the femur is as yet, of course, almost in *statu quo.*

CASE II.—In the autumn of 1876, I treated a very similar case in conjunction with Dr. Renfrew. A boy, about fourteen years of age, had been struck by a cricket ball on the right shin. On the day after, he was attacked by great pain in that situation and was suffering from high fever. On the following day I saw him, and already there was fluctuation over the front of the tibia. I therefore made an antiseptic and free incision into the part, under chloroform, gave exit to a quantity of fluid already becoming purulent, and discovered that a

disease is dangerous is shown by the circumstance, that of my seven cases, five died speedily of pyæmia, one sunk, after a time, from the supervention of phthisis, and one only recovered. That it is acute and rapid in its course, will sufficiently appear from a consideration of the details of the cases. That it is obscure is proved by the fact that *at least three of the cases were originally mistaken for rheumatism, and that its resemblance to this disease is enhanced by its frequent complication with pericarditis;* and by the further fact that two of the cases, although perhaps strictly surgical, were, by surgeons of experience, transferred to their medical colleagues, as cases of fever."

large part of the tibia was bare and dead. Very soon after this a painful and troublesome rheumatoid affection of various joints supervened. There was never any evidence of pericarditis however. The necrosis was not confined to the shaft of the tibia, but implicated the lower epiphysis, and so led to disorganisation of the ankle joint. I therefore found it necessary ultimately to amputate a little below the knee, and this was done, with Dr. Renfrew's concurrence, on the 17th Oct. The patient made a good recovery, although the painful disorder of the various joints, and especially of the hips, retarded his convalescence.

This kind of affection, whatever its exact pathology, has certainly, I think, nothing in common with acute rheumatism, as it is known to the physicians. It bears a more striking resemblance to pyæmia, and must, I suspect, be considered a form of that disease. Yet it is frequently recovered from, and occurs in many cases without putrefaction having invaded the abscess cavity, sometimes, indeed, before the abscess has been opened, as happened in the first of the two cases detailed above. The following is an account of a fatal case in which we had the opportunity of making a *post-mortem* examination. Death ensued, as will be seen, while the abscess was yet unopened.

CASE III.—A girl, about 10 years of age, was admitted into my female ward on the afternoon of the 3rd of May, 1878. I saw her on the following morning, when she was evidently in a hopeless condition. She was extremely restless and delirious; her aspect was livid and cyanotic; her breathing rapid and laboured; her pulse could hardly be counted; while her temperature was exceedingly high. The great toe of her right foot had the appearance of having lately been crushed, and I learned from her mother that this accident had occurred about three weeks previously. It was now nearly whole. The right leg was œdematous and tense, evidently very tender to the touch, and red in front; and a slight examination served to show that there was an acute periostitis present, deep fluctuation being distinct over the tibia. Examination of the chest revealed the presence of a well marked pericarditis. Any handling of or interference with the left leg elicited almost as much complaint as did the movement of the right, in which the periostitis existed; but there was no distinct swelling of the joints. Over the whole cutaneous surface of the body there was a pustular eruption; each pustule commencing as a clear pearly vesicle. With these were intermixed minute purple, petechial spots. As the child appeared

to be moribund, I contented myself with prescribing a little stimulant, and ordering the limb to be kept wrapped in a hot fomentation. She lingered until next morning. The following is the substance of Dr. Foulis' report of the *post-mortem* examination:—"The body is that of a young girl in fair condition. Over the surface of chest, back, shoulders, head, and thighs are a considerable number of pustules, varying in size from a pin's head to a pea. The right great toe is somewhat bruised; and, on incising over the right tibia, a quantity of turbid fluid escaped. The periosteum is separated from the bone throughout a length of about 6 inches. *Chest.*— Pericardium coated with soft yellow lymph, and contains about two drachms of turbid fluid. No other serous membrane inflamed. Heart normal in structure; but, on the surface of the septum ventriculorum, there is a small pustule surrounded by a reddish zone (an infarct). Lungs slightly reddened, but everywhere healthy and crepitant. Air tubes, gullet, and stomach normal. Intestines also normal, except at the lower end of the ileum, where there is considerable congestion of the mucous membrane, and an enlargement of the solitary glands, which are like heads of pins on the surface. Liver, gall bladder, and spleen normal. Supra-renal capsules softened. Capsules of kidneys rather adherent; while the cortex of each is dotted over with minute red and yellow points, in most of which is a tiny drop of pus. Pelvic organs, ureters, and pelves of the kidneys normal. Mesenteric and right inguinal glands rather enlarged and red in colour. Brain and spinal cord normal."

But, while we thus meet with spurious forms of rheumatic affection, or perhaps I ought more correctly to say, with ailments bearing a more or less striking resemblance to rheumatism, in cases of gonorrhœa, poisoned wound, and the acute necrosis of early life, it is also true that genuine acute articular rheumatism is every now and again excited by surgical injury, just as gout is, in persons predisposed to, or who have previously suffered from, the disease. The following case is an example of the truth of this statement:—S. C., aged 26, a railway guard, was admitted into the Infirmary on 5th August, 1873, with a severe smash of his left knee and thigh, caused by some railway waggons having passed across the limb. I performed a primary operation just below the trochanter, with antiseptic precautions. All went well for the first three days, when I received a note from the house surgeon saying that the patient had been feeling ill, and was, he feared, about to develop tetanus, since he complained of

some pain and stiffness in his leg and arms, and also in his jaws. Fortunately, as the result proved, these symptoms did not portend the advent of tetanus, but were the commencement of a very severe attack of acute rheumatism, with well marked cardiac complication. He made a good recovery, is still in good health, and discharges the duties of a humble office at the Glasgow station of the railway company in whose service he met with his injury. He had a severe attack of rheumatic fever six or seven years before, when resident in London.

One of the medical complications of surgical injury which proves very frequently fatal is bronchitis, occurring in patients subject to its attacks. But here, again, as in the case of rheumatism, we must be careful not to confound an ordinary and familiar disease with some other which is really the result of pyæmia. Bronchitis and pneumonia have, of late years, become euphemisms for that dreaded disease, and many a death is attributed to such a cause when in reality the pulmonary mischief is but one of the manifestations of a general pyæmic attack. But when I speak here of surgical patients dying of bronchitis as a result of the shock of injury, I leave entirely out of view all cases in which the suspicion of pyæmia could possibly be entertained, and confine the remark to simple fractures, severe contusions, and the like. The following is a kind of occurrence which has been very common in my experience:—A man, who has frequently suffered from attacks of bronchitis, but is, for the time being, in the enjoyment of good health, is knocked down on the street by a passing vehicle, or injured at his daily work, and is brought at once to hospital. The injury is not such as to occasion alarm, and no anxiety is felt in regard to the future progress of his case. During the first or second night he is noticed to be wheezy, and is probably a little troubled with cough. Soon his symptoms increase in severity. The thermometer indicates considerable fever; he is thirsty and restless; has a foul tongue and quick pulse; his respiration is hurried and difficult; his cough severe, and accompanied with considerable expectoration; while, by auscultation, râles are heard over the whole chest in both back and front. When this serious state of the chest is once aroused, not unfrequently it results in the death of the patient. * I

* As I revise these sheets for publication, there is in my accident ward a collier, about 50 years of age, who is apparently dying with symptoms exactly such as I describe above. He was admitted about a week ago with a simple fracture of both bones of his right forearm, and seemed then in good health. He has frequently suffered from attacks of bronchitis, and, like most colliers past middle life, always has a slight habitual cough.

can recall three cases of simple fracture in which death occurred in the manner I have attempted to describe. None were serious injuries. Two were instances of the ordinary fracture of the lower end of the radius, in men over fifty years of age ; and the specimens of these fractures are now in the Pathological Museum of the Infirmary. The other was a fracture of the neck of the humerus, in an old man who had long been subject to attacks of bronchitis. He was remarkably well at the time he encountered the accident; two days after I found him propped up in bed, and suffering from most distressing dyspnœa. In little more than a week he was dead. The first thought which occurs to one in trying to account for these cases is, that there has been some unusual exposure to cold, such as is apt to occur in transferring a patient from the scene of his accident to the hospital ward ; but, as the result of frequent and careful inquiry, I am satisfied that, in most cases, no such exposure has been submitted to ; and the disease, moreover, arises in mild as often as in inclement weather. It is therefore clear, to my mind, that these cases of serious, and often fatal bronchitis, are always prone to arise, as an immediate result of surgical injury, in persons who have previously suffered from attacks of bronchitis, have probably emphysematous lungs, and, it may be, more or less debilitated hearts.

I have only time to refer to one more disease as an occasional result of the wounds of accident and operation, although some others, such as tetanus, erysipelas and ague, might, from the interest attaching to them, otherwise claim some notice. The disease to which I wish to refer is scarlet fever. I have had experience of it once or twice in isolated examples, and once it occurred in my practice in three consecutive cases. It will sufficiently illustrate the usual mode of its occurrence, perhaps, if I describe these last three cases.

On the 19th of November last (1879), I was asked by Dr. Wood Smith to open an abscess in the neighbourhood of the knee of a young gentleman who was said to be suffering from scarlet fever. He had injured his bursa patellæ while playing at a football match in Edinburgh a short time previously. On returning home he became very ill, and this illness was rapidly followed by the appearance of a well marked scarlet fever eruption, with sore throat. At the same time the injured bursa inflamed and suppurated, and bursting subcutaneously, as it so often does, gave rise to a large abscess

occupying the front and outer aspect of the knee-joint. I opened and dressed the abscess antiseptically, and visited him along with Dr. Wood Smith almost daily up till 4th December. On that day I excised the elbow of a child, 3 or 4 years of age, in one of the suburbs of Glasgow, performing the operation before I had paid my visit to the patient with scarlet fever, who was, by this time, convalescent and desquamating freely. On 5th December this little boy vomited a great deal, and was very feverish, and at night (or about thirty hours after the operation), his mother noticed a red rash on the skin. On the 6th, when I saw him along with his medical attendant, he was covered with a distinct scarlet fever rash, and he had sore throat. From this attack of fever he recovered in due course, with abundant desquamation. His medical attendant, who administered chloroform at the operation, but in no way handled the wound, was also in attendance at the time upon scarlet fever. My house surgeon, who assisted me, and who necessarily did handle the wound, was under no suspicion of having been in contact with any case of the disease. On 29th December, a young lad, aged 17, a farmer's son, was admitted into the Infirmary. His right hand had been crushed in a threshing mill, and, in consequence, all the fingers except the little one, and the soft parts covering the metacarpus, were severely lacerated. I dressed the hand, removing some portions which were hopelessly injured. On the morning of the 30th he was dull and heavy looking, and yet the wounds appeared well. They were quite aseptic; there was no swelling, and he complained of no pain. In the afternoon of the same day he was delirious; the temperature in the axilla was 103° Fahr.; he had passed urine in bed, and in the evening (less than thirty hours after the operation) there was a crimson rash across the chest, and on the inner surface of the arms. Next morning the rash had faded there, but had spread down the arms and had also appeared on the legs. He had sore throat and furred tongue; had been vomiting and was still as highly feverish. I concluded this also was a case of scarlet fever. In the afternoon he was seen by my friend Dr. Russell, Medical Officer of Health for the city, who corroborated the opinion, and we had him removed to Belvidere Fever Hospital. His case, I understand, pursued a typical course, with free desquamation, and he ultimately made a good recovery. As regards the likelihood of my having infected this youth with scarlet fever, I shall simply state the facts known to me which bear on the subject.

It was on the afternoon of 29th December that I saw him first and dressed his hand. It had already been temporarily dressed by his medical attendant in the country. I had last seen the two scarlet fever cases in private practice, to which I have referred, respectively on the 14th of December (excision of the elbow) and 27th of December (the abscess of the bursa patellæ). I wrote to the medical man in the country, who had seen and dressed his hand when the accident occurred, to ascertain if any possible source of contagion could be found to have been present there. He replied—"I have made inquiry and find no case of scarlet fever nearer his home than two miles, although it is prevalent in our parish, and in my own practice. I did not visit a case of scarlet fever either on Sunday or Monday (*i. e.*, the day of the accident and the previous day), and as there are no other apparent means of contagion, I can scarcely form an opinion of the cause of the attack."

These were all very distinct and unmistakable cases of the disease; having a brilliant rash, sore throat, desquamation, and all the usual symptoms of well developed scarlet fever. Indeed, the only point which distinguishes them from cases occurring apart from surgical practice is the rapidity with which the eruption followed upon exposure to contagion, supposing that that were received at the time of the infliction of the wound. But in very many cases, not only is the period of incubation shortened, but the disease is so modified, and its symptoms so incomplete and "disorderly" (Paget), that doubts are often entertained as to its real nature.

But careful observation, both in this country and on the Continent, seems to have established, beyond doubt, the fact that even in those cases, where the symptoms are incomplete and unusual, the disease is really scarlet fever. Dr. Gee, who writes the article on "Scarlet Fever" in Reynold's *System of Medicine*, refers shortly to this subject; and strongly expresses his conviction that the disease, as it occurs in surgical practice, is genuine and real. He supports this belief with the following reasons:—"First, it occurs in epidemics; secondly, in a given epidemic a severe case occasionally relieves the monotonous recurrence of the very mild forms; thirdly, a precisely similar scarlatinilla attacks, in the same epidemic, patients who have not been subjected to operation, and who have no open sore; and lastly, by way of a veritable *experimentum crucis*, that however freely these patients are exposed to ordinary scarlet fever afterwards, they do not contract that disease."

Two explanations are offered of this connection between the performance of operation and the occurrence of scarlatina. The first is the more obvious—viz., that the contagion is communicated through the wound, at the time of its infliction, probably by the surgeon or his assistants; or secondly (to quote once more Paget's own words), " those who suffer with scarlatina within a few days after operation had previously imbibed the poison, but would not have manifested its effects so soon, if at all, unless their health had been exhausted or disturbed. The second of these explanations," he says, " appears rather the more probable, for it is in accordance with what has been observed, when many persons have been exposed to the contagion of fever, and some have been afterwards exhausted by fatigue and otherwise. These have had fever; while those who rested after exposure have escaped it." In all probability, both of these explanations are correct, as they appear to be in the case of puerperal scarlet fever, in which the parallelism between the surgical and obstetric disease is as complete (except, perhaps, as regards its prognosis) as in some other matters to which I have referred. A woman may either have the infection of scarlet fever conveyed into her system at the time of delivery; or, as occasionally happens, the infection may remain latent in the pregnant woman for some time, until the occurrence of delivery determines the appearance of an attack of scarlatina. The shock, or disturbance of the health (or whatever else you like to call it), of the operation or accouchement determines that the potential and slumbering disease shall become a fully developed reality, and that without further delay.

I have now, gentlemen, brought before you, very imperfectly I am well aware, my experience of a class of cases which is of great interest to all practitioners. Moreover, there is hardly a department of practice in which this subject may not be advantageously investigated. If, therefore, I shall have succeeded in directing the attention of any one to it to-night more pointedly than his observation or reading may have hitherto done, I shall feel myself rewarded; and shall be pleased to believe that I have not entirely stumbled in this the very act of making my bow.

SOME QUESTIONS ON THE PATHOLOGICAL RELA-TIONS OF TUBERCLE, STRUMA, AND PHTHISIS PULMONALIS.

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(Read before the Glasgow Southern Medical Society, 25th November, 1880.)

IN a consideration of the subject which is to engage our present attention, many questions of great scope and importance suggest themselves, only a few of which we propose to bring under your notice, and that in a somewhat fragmentary manner, more to the intent of provoking thought and remark than of elaborating argument and stating conclusions.

What do we understand by the term "tubercle?" This is practically a question of classification. So long as we appreciate the nature of the pathological processes of which our patient is the subject, what terms we employ in describing them must ever be of secondary importance; yet, for the intelligent discussion of any subject, it is of prime moment that no dubiety exist as to the significance of the terms employed, and classification, though confessedly arbitrary, should be sound as to its principles, and convey definite ideas by its terminology.

Many and various pathological products have been grouped under the name tubercle. Now, however, it includes but the following:—grey granulation or miliary tubercle; caseous matter, or yellow, crude, tubercle; and a highly cellular inflammatory infiltration called "infiltrated tubercle."

In miliary tubercle we have a hard grey, translucent nodule, exhibiting, under the microscope, a distinctly cellular structure. The cells are of no specially distinctive type, and display the various phenomena usual to living tissue elements; no histological character merits the title "criterion." Though Schüppel and others have called attention to the presence of giant cells as being distinctive, the weight of evidence appears to me in favour of the view just stated. The cells appear to originate in the connective tissue corpuscles in the coats of the finer arterioles, and in the process of their deposition we have an abundant proliferation and enlargement of the adjacent epithelial and connective tissue cells of the blood and lymph vessels, leading to obliteration of the lumen of these canals, thereby inducing the bloodless condition invariably true of miliary tubercle. The nodule thus being extra-vascular, it

depends, for its sustenance, on the nutrient juices brought to it by the vessels of the tissues in which it is set, so the tubercular elements are developed solely at the periphery of the nodule, while at its centre, unless the nutritive processes be all the more active, the only change possible is one of degeneration; accordingly, in the larger groups of tubercles, the centre of the mass is usually observed to have lost its translucency, become yellowish, opaque, and friable, converted, in fact, into a cheesy mass, "the crude tubercle" of Laennec,—at one time universally, and even now, to a notable extent, recognised as the specific type of tubercle, which Reinhardt, Virchow, and others, dethroned from "that bad eminence," and denominated "caseous material."

The process of caseation, to which miliary tubercle is so frequently subject, is essentially one of fatty degeneration. Now, fatty degeneration is made use of in the economy in preparing for absorption various products, normal as well as adventitious, such as the enlarged uterus of the post-partum state, extra callus thrown out for the union of fractured bone, &c. Indeed, I think I am right in saying the absorption of any proteid matter, excepting what has been peptonised by the gastric fluids, is effected through a process transforming the albuminoids into fat. But fat, as you are aware, requires to be in the form of an emulsion before it can be taken up by the lymphatics and absorbed, and the fact of an emulsion argues the presence of fluid. Now, the central part of the tubercle nodule we saw to be extra-vascular, and cut off from fluid supply, by which circumstance the phenomena of fatty degeneration are somewhat modified. The cell walls are not dissolved nor the fat granules liberated, but the cells, compressed by the increase in their bulk, incidental to the fatty change, dry and shrivel up into shapeless masses constituting caseous material. Thus is produced yellow tubercle; but investigation has established this generalisation—In whatever product fatty degeneration has occurred, fluid sufficient to dissolve the cell walls and emulsify the free fat being absent, a cheesy mass of the same nature and constitution is the resultant; said conditions existing at the seat of a simple inflammatory exudation, inspissated pus, or such like, caseating processes ensue. Thus, it appears, our present contention may be stated. In miliary tubercle we have an ill disposition of tissue elements, assuming, however, a determinate form, having an origin, situation, and life history definitely *sui generis*, whereas, caseous material, so called yellow tubercle, while it may arise in miliary tubercle that has undergone fatty changes, may be

the outcome of any albuminous product that has undergone a like degeneration under similar circumstances. On these grounds it seems to me more in accordance with good classification to refuse caseous matter a position under the term tubercle.

We have stated briefly the general histological characters of miliary tubercle; let us now inquire into What is its mode of origin?

Buhl, I believe, was the first to promulgate the idea that the deposit of miliary tubercle depended on the absorption of a previously existing morbid product, and to suggest that the probable source of infection was caseous matter that had undergone softening and been absorbed. In the experiments instituted by Villemin, and repeated and amplified by Lebert, Simon, Burdon-Sanderson, and others, it was found, whenever tuberculosis was set up in the subjects of experiment, caseous material stood in relation of antecedent to the general disease. Writing on acute miliary tuberculosis in Ziemmssen's *Cyclopædia*, Ruehle says—" We know of but one cause for the formation of miliary tubercle—viz., the absorption of caseous matter. How this produces tubercle requires still further investigation. Waldenburg supposes, from the fact that the colouring matters used to inoculate animals are to be found in the tubercle nodule, that a transportation of corpuscular elements takes place, and it is very certain that a transportation must take place when a substance introduced into the body at one place produces a formation at another part." However, I am not disposed to lay great stress on the evidence afforded by the pathological experiments indicated, since it is open to serious question whether the disease, induced by inoculation and similar proceedings in the rodentia, is strictly analogous to miliary tuberculosis as we find it in the human family. Appealing once more to authority, D. J. Hamilton, writing in the *Practitioner*, says—" Under whatever circumstances tubercle is found in man or in the lower animals, one conditional law holds good as to its development. It is invariably preceded by some caseous deposit, either in the tubercular organ or in some distant part, which is in process of softening, and which acts as a source of infection." Again, the same writer says—" Some material, probably a ferment, is elaborated in the process of caseation, which apparently acts as a specially virulent irritant upon the tissue into which it is carried, exciting that tissue to abnormally great activity of growth, and producing the body which we name tubercle." This latter paragraph, *i. e.*, regarding the elaboration of a

ferment, appears to me important, for though it be mere hypothesis, something is required to explain why the effects of the absorption of the products of a simple fatty metamorphosis which, from an accident of its environment, has been compelled to tarry awhile in the condition of cheesy matter, but which, from altered circumstances, is at length emulsified ; something, I think, must explain why the effects of the resorption of such a product should be more baneful than those following the absorption of the product of any fatty degeneration that has not undergone caseation, but proceeded directly to the condition of emulsion.

Further, and finally, on this, the narrower view of the question, as to the origin of miliary tubercle. It is a fact of frequent observation, that persons not specially vulnerable, in whom, circumstances being suitable, caseous material has occurred, in the immediate neighbourhood of the caseous part miliary tubercles are sometimes found, generated, as it were, at the focus of infection, the " vis naturæ " at the same time being vigorous enough to resist the development of the general disease.

Considered in a wider relationship, tubercle is not an accidental product evolved in the individual, but is an expression of a subtle organic dyscrasia operating in the individual. It is not so much a factor in the downfall of the physiological status of the individual, as it is a proof of a previously operating decay in the organism. This consideration leads me to speak of the constitutional states leading to the development of tubercle— the predisponents to tubercle. We may say, generally, whatever favours the occurrence of caseation predisposes to tubercle. Now, as you are aware, caseation is especially prone to occur in the strumous, so we shall confine our attention chiefly to the constitutional state in such persons.

Scrofula, *per se*, is an evil habit of body which not only increases the liability of the subjects of it to suffer from certain bodily ailments, but so modifies the course and symptoms of these ailments, that we are led to look beyond the manifestations of the local disturbance to the dyscrasia which stamps its impress on the morbid processes in operation. Regarding the intimate nature of scrofula, very much remains to be discovered. General poverty of the blood, and disproportion of quantity of blood to weight of body, have been noticed as phenomena attendant on the condition. I think a general analogy might be drawn between the constitutional state in scrofula, and one of its manifestations—viz., rickets, in which disease you have delay in the developmental processes, the cartilage cells retain-

ing for an abnormally long period their embryonic condition, when cell proliferation is most active; may it not be that, in the scrofulous the tissue elements generally retain, in varying measure in different individuals, their embryonal characters, abundant in protoplasm, active in multiplication, prone to decay.   Whatever be the subtle principle underlying the diathesis, its effects are definite and well recognised, and I cannot do better than state them in the words of Rindfleisch.   " It is the characteristic nature of the constitutional disease called scrofula that all the inflammatory processes that occur in certain individuals run a peculiar course.   While in a normal individual an inflammatory infiltration of any portion of connective tissue either resolves or suppurates in a moderate space of time, in scrofulous persons the same inflammation shows a well marked tendency to be protracted.   The infiltration disappears very gradually, or it remains stationary, and undergoes regressive changes of a cheesy character. . . .   Virchow first called attention to the predominant cellular character of the scrofulous exudation, to its hyperplastic nature, and to the low vitality of the cells which compose it."

Comparing, more minutely, simple inflammation with scrofulous, Rindfleisch says, " In simple inflammation the infiltration is a temporary condition which terminates in suppuration, in organisation, or in resolution.   In scrofulous inflammation the only termination is a cellular infiltration of the connective tissue.   By this infiltration the connective tissue is converted into a hard, dense, greyish, half translucent mass, which constitutes the acme of the process.   In such a dense infiltrated tissue the blood-vessels become occluded, and then necrotic processes ensue.   At least there is as yet no proof that scrofulous infiltration is capable of any changes except degenerative ones.   This degeneration begins as a cheesy transformation, first of the centre, then of the entire infiltration."   I have quoted at such length that we may have before us a statement of the characters of the infiltration spoken of as " infiltrated tubercle," and advanced by high authority, as being identical in its nature and essence with miliary tubercle.   The resemblances in their minute structure, and in their proneness to undergo the same cheesy degeneration, are undeniable, but believing, as we do, that there exists between them a specific difference, we but regard scrofula, the favourer of caseation, as a frequent predisponent to tubercle.

Let us look for a little into the question of the identity of scrofula and tubercle, and first deal with some of the possibilities of this infiltration.   I think we may assume, if the infiltra-

tion stop just a stage short of that spoken of as constituting "the acme of the process," we might have the structure nourished by the adjacent vessels after the manner of cartilage, and so maintaining its condition or undergoing fibrillation; were it to stop yet a stage further short of the acme, before the occlusion of the vessels is permanent and general, we would have it resolvable like ordinary inflammatory exudation. To favour this view, I shall instance a few observations, bearing, however, more strictly upon consumption, yet of value, I think, on the general question we are now considering.

Ruehle mentions that "consumption may sometimes prevail in regions as Corsica, St. Thomas, &c., where there is no scrofula; on the other hand, scrofula is often found where consumption is absent or rare, as Hartz, Styria, Peru, &c." In a letter from Cabul, published *Lancet*, 24th April, 1880, Dr. Owen says, "During the severe weather, asthma, bronchitis, and rheumatism, were very common. I have never seen such a number of asthmatic cases in my life. It is remarkable, that although scrofula is very prevalent, very few cases of phthisis presented themselves." To me these observations reveal, making allowance for imperfect recording, the following broad facts. In Corsica, St. Thomas, &c., the prevalent consumption either is non-tubercular, or the tubercle does not usually originate in scrofula. With regard to Hartz, Styria, Peru, &c., it may be the conditions of life, climate, &c., are such that the prevalent scrofulosis is not specially directed to the respiratory organs. But the same cannot be said regarding the note from Cabul Dispensary. Here were grave respiratory troubles markedly prevalent, with coincident scrofula, yet phthisis notably scarce. However, I may safely appeal to the experience of every one present, for all of us have seen very serious respiratory diseases occurring in strumous subjects, yet unattended by the symptoms usually considered inevitable in tuberculosis. Now, in cases such as I have noticed, we are bound to believe a highly cellular infiltration of the pulmonary tissue has occurred, yet, barring delay in resolving itself, it behaves in no way differently from the exudation attendant on ordinary inflammation, with which I think it most properly classified. I don't know that I have stated my argument logically, or even clearly; my belief is that there exists a specific difference between the richly cellular infiltration, such as we find in the inflammations of strumous subjects, and that which we recognise as miliary tubercle—a difference, not in structure, not so much in mode of distribution—a difference, in fact, not so apparent to the pathologist as to the clinical

observer who, in the guidance of many "an anxious case" of inflammatory disorder, even in the strumous, has much of the gloom in his prognosis lightened by the thought—It is not tubercular.

I have argued, in a general way, that, in classification, miliary tubercle should be regarded as the specific type of tubercle. Now, in what does this specificity consist? We have seen it is not in structure, nor in its proneness to undergo characteristic changes, degenerative or otherwise. In the external form assumed by an aggregation of its elements there is too little distinctive to warrant us claiming specificity on that score. Let us then look at miliary tubercle with regard to its behaviour in the living body, and see on what phenomena it is attendant, and to what it gives rise.

We have already observed that miliary tubercle is but the expression of a constitutional cachexia, which is found to manifest its greatest intensity in the affection known as acute miliary tuberculosis. In this affection we have a more or less sudden onset of such symptoms as high fever, copious perspirations, &c., with the early supervention of the general state designated "typhoid," resulting in a collapse of the vital powers within a very few weeks of the appearance of the symptoms. In such cases we find a very general dissemination of miliary tubercles throughout all the organs of the body; the lungs, liver, spleen, meninges, &c., are found studded with the nodules. The blood retains its fluidity, and is dark in colour, showing that it too, the sole vehicle of nutrition, has suffered profound degenerative changes in the general disturbance. From a consideration of the current phenomena of acute tuberculosis, we are led to classify it with the acute infective diseases, and are, to a certain extent, borne out in this view by the fact we previously mentioned; the evolution of tubercle can usually be traced as consequent on the absorption of some caseous material—the individual being self-infected—however, there are cases where this sequence of events cannot be followed out, for which some other mode of infection must be sought. We know of the experimental infection of guinea pigs and rabbits, animals which, left to themselves, are notably non-liable to tubercle, as Dr. Crisp has shown. We have heard of the dog which became tuberculous by eating the sputa of his phthisical master. Occasional notices appear of the dire effects, having for their cause the ingestion of milk of tuberculous cows. In fact, statistics, scanty though they be, have been shown bearing out the view that a healthy person, by prolonged and intimate contact with a tuberculous, is rendered more

liable to suffer from tuberculosis.* These speculations lead us back to the ancient and popular doctrine of the infective nature of phthisis, and, if established, would go far to gain for tubercle a position, as regards specificity, parallel to that occupied by syphilis or other recognisedly specific diseases.

The views on the specificity of tubercle I have endeavoured to advance, in opposition to those regarding tubercle merely as a product of inflammatory action occurring in the scrofulous, are based, partly on the specific origin of tubercle, but mainly on the specific phenomena accompanying the development of tubercle. The general phenomena we have glanced at; let us now notice the action of tubercle on the tissue in which it is lodged, always bearing in mind our task is to trace the action of *the tubercle*, apart from its concomitants, inflammation, &c. Here I shall draw largely on the authority of Rindfleisch, who says, " Tuberculosis of the uro-genital mucous membrane affords the best example of the changes which tuberculosis, *per se*, is capable of effecting—of the disturbances which may be ascribed exclusively to it. The tuberculous ulcer of the urinary bladder is a sharply circumscribed, more or less circular defect in the mucous membrane, with a dirty yellow bacony infiltration of its base and edges. On closer examination, this bacony infiltration proves to consist of *true tubercles ;* miliary nodules, some grey, some cheesy, packed closely together, form the floor and edges of the ulcer, while the youngest and smallest granulations serve to extend the process, and are scattered far in advance of the rest through the healthy parenchyma of the mucous membrane. In fact, the growth of the miliary tubercles takes the place of the plastic infiltration of common inflammation ; while their cheesy metamorphosis, softening and disintegration, stand for the subsequent destructive suppuration." Such is the process of destruction wrought out by tubercle, and indeed it presents but few similarities to any process of inflammation. Be it observed, the specific product persists and gives its impress to the lesion.

Coming now to a consideration of the action of tubercle in phthisis pulmonalis, let us attempt first to arrive at an understanding of what we would signify by the term. In the broad sense, phthisis means a general wasting of the tissues, induced by excessive losses. By phthisis pulmonalis we mean a wasting away, a general downfal of vitality, induced by destructive changes, which can be largely referred to the

* Since the reading of this paper to the G. S. M. S., notes and remarks on Tappeiner's well nigh conclusive experiments have been published.— *Lancet*, 27th November, 1880.

respiratory apparatus, and, in a loose way, may be spoken of as occurring primarily in the organs of respiration.

From this point of view it is obvious phthisis pulmonalis must be considered a general term ; for whatever process is capable of setting up and continuing destructive changes in the lungs may be the prime and only factor in pulmonary consumption, and we would hold that many processes other than the tubercular are quite capable of effecting all we have stated as constituting phthisis pulmonalis.

Here I would raise the question of "hereditary predisposition." Doubtless this term covers many mysteries such as may well be considered inexplicable ; yet, I would maintain that, in reference to the disease under our consideration, it very frequently finds expression simply in the transmission of a faulty conformation of the thoracic parietes, and particularly of their upper parts, a conformation which, by the opportune and judicious use of gymnastic exercises, calculated to strengthen the respiratory muscles and increase the mobility and capacity of the chest walls, may be entirely remedied, and the morbid tendency to phthisical disease abolished in the individual.

The pathological lesions in the lungs, common to all forms of pulmonary consumption, are developed by diverse processes, yet have the following distinctive stages commonly present :

1st, Condensation of pulmonary substance.

2nd, Degeneration and softening.

3rd, Ulceration with formation of cavity.

Now, this series of events may be instituted by, or occur in course of very various affections, such as catarrhal and, rarely, croupous pneumonia, pulmonary apoplexy, or hæmorrhagic infarction, &c., &c. During the progress of any of these maladies, tuberculosis may be set up and thus constitute phthisis of a mixed character ; or the phthisis may be tubercular from its very outset.

Acute tubercular phthisis presents so many points of similarity to acute general tuberculosis that we are led merely to mention it and pass on to the much more common chronic variety ; and here we may ask, Can the appearance of tubercle be held to constitute the first step in the disease as it affects the lungs, or does the advent of tubercle depend on an initial catarrh, of which it is, indeed, the product ? Rindfleisch states the position in these words :—" I have never seen a circumscribed catarrh of the small bronchi without an initial *tubercle granulum,* nor an initial *tubercle granulum* without some bronchial catarrh." He believes "the catarrh is the

earlier, the tubercle the later process." And, undoubtedly. such is the order of progression in most cases; but, I would ask you to remember, the specific element does not enter into the initial catarrh, nor is the appearance of miliary tubercle a necessary consequent to it. Moreover, looking at the nature and observed phenomena of acute general tuberculosis, we are led to the belief that tubercle may be, and often is, the initial local expression of the process of tuberculisation, the inflammation following on the eruption of the tubercles, just as it supervenes on the presence of any irritant, and are partly confirmed in such belief by the consideration of those insidious cases of tuberculosis of the lung, where we have considerable condensation from tuberculous deposit, unattended by the irritative cough so pathognomonic of bronchial catarrh.

The tubercle nodules are developed in the interalveolar connective tissue, especially at those points where the bronchioles are pouched into air cells. Here they form greyish translucent projections into the alveolar cavity, encroaching on its capacity. Increasing in bulk, by proliferation of its elements, it diminishes the calibre, and by and bye occludes the adjacent capillaries. Catarrhal inflammation occurs in the bronchi and true pulmonary tissue—inflammation which, from the continued presence of the initial irritant, is attended by an exudation of a highly cellular character, infiltrating the tissue and furthering the process of condensation. Cheesy degeneration sets in, as we have said, at the centre of the mass, and, progressing towards the periphery, may come to involve the whole of the adventitious growth, including the infiltration. This caseous degeneration may be said to constitute the end of the stage of condensation, though, in some few cases, a further stage of calcareous deposit may be reached. Softening begins usually in the catarrhal secretion blocking the air cells, and spreading rapidly through the degenerate mass, resolves it into a grumous purulo-mucoid material which, gaining exit through the bronchi, is coughed up, leaving an ulcerating cavity which extends itself after the manner of the ulcer of the bladder already mentioned, but having its progress greatly accelerated by inter-current attacks of inflammation, and by the state of unrest necessary to respiration, as well as by the mechanical tension induced by the acts of inspiration, coughing, &c.

Of course, during the progress of these changes, many symptoms worthy of notice, and susceptible of pathological explanation, obtrude themselves on the attention of the physician, but it is beside our purpose to give them con-

sideration here. What I have endeavoured to do is to sketch very roughly the action of tubercle in the fulfilment of the essential phenomena of pulmonary phthisis.

Let us now consider how these stated phenomena may occur without the presence of tubercle. In this connection I think we cannot do better than raise the question of "fibroid phthisis." In this form of the disease, the inter-alveolar pulmonary tissue is the seat of a fibroid infiltration. The primary step in the process is most probably a chronic interstitial pneumonia leading to a cellular-fibrinous infiltration, which attains to the low kind of organisation exemplified by granulation or cicatricial tissue. The lung is found condensed, firm, and resistant to pressure; it is traversed by bands of cicatricial tissue, and is contracted as to its bulk. This may be held to constitute the first stage. The second and third stages may be brought to pass in a manner such as may be explained thus :—In inspiration, by the action of certain muscles, the chest cavity is enlarged, and air rushes in to restore the equilibrium of pressure. Now, it is obvious if the alveolar walls are unusually rigid and non-dilatable, or if the alveolar cavities are choked, an abnormal pressure is brought to bear on the bronchial tubes, under which pressure the tubes dilate (bronchiectasis). Another factor in the production of this bronchiectasy is found in the shrinking of the granulation tissue, and especially of the cicatricial bands which draw upon the bronchial walls, and all to more advantage if, as is frequently the case, they have one end fixed to the rigid thoracic parietes by an adherent pleura. By means such as these the bronchial tubes are, at certain parts, dilated, and, it may be, pouched. From these dilatations or pouches, the secretions are difficult to expel, which difficulty is intensified by the diminished compressibleness of the lung, and is most felt at those parts where expiratory pressure is most feeble— viz., at the apices. Here, then, the secretions accumulate, and, by inspiration, may caseate ; or, what is more frequent, may decompose and irritate the bronchial wall, by and bye causing an ulceration which, spreading rapidly through the lowly vitalized granulation tissue, forms cavities, and thus completes the essential phenomena of phthisis pulmonalis. There are some who hold the opinion that the induration in this form of disease is due to the fibrillation of infiltrated tubercle. In fact, Dr. Moxon states, "Fibroid phthisis is neither more nor less than old phthisis." However, we need not discuss this point, since it hinges on the question of the identity of tubercle, on which we have already stated our views ; but let me notice,

Dr. Bastian has tabulated 30 cases of fibroid phthisis, in none of which could he find any structure resembling tubercle. Dr. Andrew Clark reported, to the Clinical Society of London, a case where fibroid phthisis was merely part of a general fibrosis of the parenchymatous organs, and which proceeded to a fatal issue without exhibiting the symptoms ever present in tuberculosis.

A considerable number, perhaps the majority, of phthisical cases may be classed as mixed cases. The process begins independently of tubercle, but by and bye the tubercular element is developed, and soon makes apparent its influence on the progress of the case. This tubercular invasion may assume an acute or a chronic form. The acute cases, since they are usually accompanied by a wide dissemination of the miliary tubercle, may be classed with " acute tuberculosis," while the chronic form may rank along with chronic tubercular phthisis. Holding that both the acute and chronic forms have their origin in the operation of the same septic influence, how may the differing manifestations be accounted for ? In acute cases the blood is thought to be the vehicle of the poison, so its effects are widespread and rapidly progressive, whereas, in chronic cases, the lymphatic system is the channel of conveyance, so the process is slower and its operations more localised, each gland acting like a sentinel retarding the progress of the enemy, endeavouring, I believe, to rid the virus of its deadly influence. But what hinders the poison entering the blood in all cases ? No preventive exists, so far as I am aware; however, it is a fact proved by experiment that the blood, in certain conditions, can and does exercise a neutralising power over certain organic particles introduced into it, decomposing them into other and innocuous principles ; thus may it act on the tuberculous poison in those cases which show a chronic course.

There are many and important questions I cannot touch upon, and much that I have touched upon I am forced to leave in a very crude form. I have already stated my aim, and may summarise the views I have endeavoured to advance in the following propositions :—

Miliary tubercle the only true tubercle.

Tubercle probably never primary.

Scrofula a frequent predisponent to tubercle.

Tubercle not essential to phthisis pulmonalis.

SOME POINTS IN TRACHEOTOMY.

By DAVID FOULIS, M.D., GLASGOW.

(Read at the Southern Medical Society, 13th January, 1881.)

WHEN my friend Dr. Carr requested me to read a paper here, it occurred to me that there were one or two points in connection with the operation of tracheotomy which might fairly be discussed by the Society. The members are familiar with the description of it given in books, and many of those present have no doubt performed this operation repeatedly. It would be superfluous therefore for me to attempt to recapitulate the whole *modus operandi* in this place, but it may perhaps be permitted to me to refer to some of the difficulties which I have myself met with, and to invite an expression of opinion on those points where improvement appears possible.

In the course of my practice, I have had occasion to open the air tube twenty-three times for very varied diseases; but I will restrict my remarks here to those cases in which the *trachea* was the seat of the incision, and leave out of account nine cases in which the opening was purposely made above the cricoid cartilage. This leaves fourteen cases of tracheotomy.

First then, as to the fatality of the operation. I may say that in no case could death be traced to the operation. Six of the cases were for diphtheria; one for laryngeal phthisis; three for acute inflammation and swelling of the mucous membrane lining the larynx; three for extreme stenosis, owing to old standing laryngeal inflammation ; and one for almost complete closure of the larynx by intralaryngeal papillomata in a child 2½ years old. Four of the cases of diphtheria died of the disease at varying periods, but with the breathing relieved and death rendered more peaceful. Another case recovered from the immediate danger of the diphtheritic attack, so far as to permit of the removal of the tube and the closure of the wound, but sank two months after the operation from cardiac syncope, probably one of the paralytic after effects of the disease. The last of the six cases of diphtheria made a perfect recovery, the tube being removed in a fortnight. The case of laryngeal phthisis was tided over the immediate danger of suffocation, and only ended fatally a year after the operation from extension of the disease. The three cases of acute inflammation and swelling of the mucous membrane of the larynx made excellent recoveries, and were able to dispense with the tube within a month after the operation. The three

cases of chronic thickening were in elderly people, and they, too, rallied well after the tracheotomy, but in them the tube continued to be worn. One of them succumbed to diabetes several months after the tracheotomy; the other two are alive and in comfort as regards the breathing. Lastly, the little boy whose larynx was occupied by intralaryngeal growths is well and strong, and though the tube is still in (one year after the operation), I have been able to remove a number of the papillomata from the larynx, and there is a fair prospect of our being able to dispense with the tube soon.

I have thought it right to mention briefly the cases which, owing to the kindness of medical friends, have been sent to me; but of course I do not bring forward the statistics of so small a number of cases from any belief in their novelty or importance, but rather to show that my remarks have at all events a certain basis of observation.

The first point to which I would draw attention is the size of the tube to be used at different ages. This is particularly important in the operation on very young children, but is not beneath attention even in adults. The youngest patient on my list was a female child, aged 6 months, who, four days before I saw her, had "caught cold." The symptoms at first were very slight, but a certain amount of dyspnœa set in, and gradually increased to such an extent as to alarm her attendants. Active treatment by calomel and tartar emetic and local blood-letting failing to give relief, I was asked to perform tracheotomy. When I saw the child (10 P.M., 11th November, 1879), it was in an agonizing state of dyspnœa; the skin was pale and clammy, the lips pale blue in tint; at each inspiration the eyebrows rose and the forehead wrinkled, and the supraclavicular and lateral costal regions sank in; while the noisy inspiration and expiration indicated advanced stenosis of the larynx. There was no membrane on the fauces, nor any suspicion of diphtheria; and the diagnosis of simple acute laryngitis appeared to be quite clear. No time was to be lost, as the child was fast becoming exhausted, and, therefore, Dr. Lothian put her under the influence of chloroform, and I cut down on the trachea. At this early age the trachea is a very small and soft tube, not easily distinguishable by the finger, so delicate are its rings; and the larynx, too, is soft and yielding. I therefore selected the most resistant point of the air tube as my guide—namely, the cricoid ring, which gave me a clear clue to the position of the upper end of the trachea. Exposing this, I divided the first four rings, and, of course, the isthmus of the thyroid gland. Then arose the
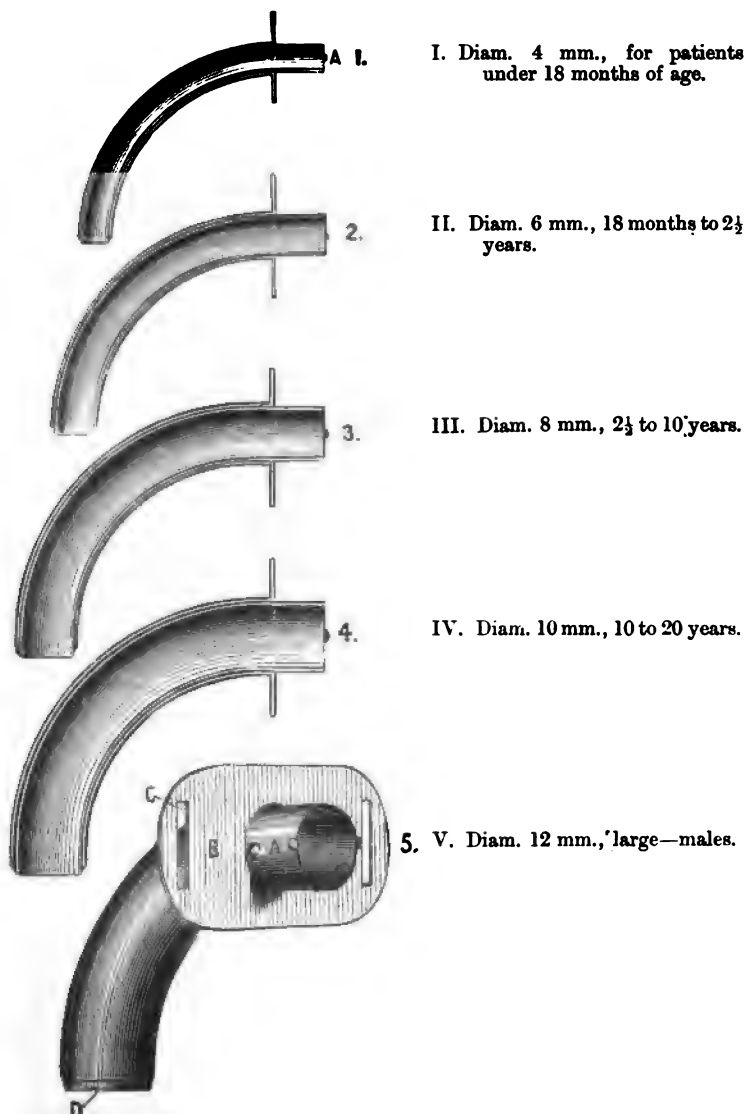
doubt as to the propriety of putting in the smallest tracheal tube which I had been able to procure. Some observations of my own,* and the published measurements of M. Marc Sée,† had taught me that the diameter of the trachea at birth is not more than 4 mm. or 5 mm., and that for several months after birth this size is not much altered. Now, my smallest tube measured 5 mm. external diameter at the point. This would have completely filled the trachea, and, I thought, might cause erosion if the tube were to remain in for any time. I contented myself with the introduction of the smaller inner tube, the diameter of which was 4 mm.; and, as soon as possible, I had a tube made by a silversmith, with an outside diameter of 4 mm. This new tube (Fig. 1) was made of equal diameter throughout, of solid silver, and very plain pattern. At the suggestion of the patient's father, the inner tube was made to project a little at the front, in order to facilitate its removal for cleaning; and all loops and hooks were omitted. I was delighted with this tube (Fig. 1); it was easily worked, and to the nurse and mother of the patient it presented not the least difficulty. The diameter of the inner tube, small as it was—3 mm.—gave ample room for respiration; and the recovery of the child went on uninterruptedly. Thirty-two days after the operation the tube was finally removed, and the small wound allowed to heal. Unfortunately, about ten days after the wound had healed up, the baby caught cold again, pneumonia set in, and, in a few days, she died; but the operation may be fairly claimed as quite successful.

In March, 1880, another case of simple acute laryngitis in a female child, æt. 17 months, with excessive dyspnœa, occurred in the practice of Dr. John Wilson, who asked me to see her. We decided on tracheotomy, which I performed in the same way as in the other case, my incision passing through the isthmus of the thyroid gland. The same 4 mm. tube was used, and the patient made an excellent recovery, ample breathing space being given by the 3 mm. lumen of the inner tube. Following up the idea of carefully adapting the size of the tube to the individual case, I have had a set of five silver tubes made, graduated according to the measurements of the trachea at different ages, so that one may be able to select, without hesitation, a tube which is sure to fit the individual case, from birth onwards to adult age. I say from birth onwards, for a case of an unusually interesting kind has come under my notice, in which the propriety of tracheotomy at this

* See Paper by Dr. Miller, in *British Medical Journal,* 17th Nov., 1877.
† See *Lancet,* 13th July, 1878, page 58.

early age has been seriously discussed.   This was the case of a
newly born male child, which succumbed to laryngismus a few

I. Diam. 4 mm., for patients
under 18 months of age.

II. Diam. 6 mm., 18 months to 2½
years.

III. Diam. 8 mm., 2½ to 10 years.

IV. Diam. 10 mm., 10 to 20 years.

V. Diam. 12 mm., large—males.

Full size outlines of tubes.   V. is a side profile view of the largest tube to
show plate, &c.   A is placed between two knobs which check the inner tube
and permit it to be grasped.   D shows the lower end.

hours after birth.* Every sort of sedative treatment was tried, and failed; and the question of tracheotomy was raised only to be negatived. But, bearing in view the facts that three children of the same parents had previously succumbed to laryngismus shortly after birth, and that a *post-mortem* examination of the child which I attended failed to reveal any disease or abnormality of the larynx, we have agreed that, in the event of another delivery being followed by laryngismus in the child, the apparently severe measure of tracheotomy is not to be shirked, and to this the parents have given their approval. The success of the operation in the child æt. 6 months (above detailed) leads me to think that a favourable result may be got even in the newly born.

The curve of the tubes is a wide one, in order to avoid that ulceration of the anterior wall of the trachea which often follows the use of the ordinary over-curved tubes. These tubes are sold by W. B. Hilliard & Sons, 65 Renfield Street.

Another interesting detail in performing tracheotomy is the exact seat of election for the opening in the windpipe. In books we have a tradition handed down informing us that the windpipe may be opened either *above* or *below* the isthmus of the thyroid gland; and hæmorrhage is alluded to as an event to be dreaded if the isthmus be cut. But some of the best authorities (Erichsen, Bryant, and others), while still advising us to leave the isthmus alone if possible, say that it may be cut without scruple when necessary. And it is not difficult to understand why this should be done; for in the isthmus in the middle line there are no blood-vessels, just as in the tongue or in the perineum the middle line is devoid of vessels of more than capillary size. Hyrtl failed to inject the one side of the thyroid from the other through the isthmus. It is quite true, indeed, that the thyroid arteries, ramifying outside the capsule of the thyroid body send small branches across the trachea to anastomose with those of the opposite side, but these vessels are quite outside of the isthmus, and do not belong to it. In many cases, especially in young children, and people with short necks, the space between the cricoid and the isthmus is so very small that no tube could be got in without dislodging the isthmus or incising the cricoid, and as a matter of fact, I believe the isthmus is often cut unawares in children. But in the fear of the isthmus, which young and even more experienced surgeons are imbued with, serious mistakes are made. I have been called twice to make *post-mortem* examinations of children dying of diphtheria, in whom the so-called

* *British Medical Journal, op. cit.*

high operation has been done by surgeons who certainly could not be called quite inexperienced. In one of these cases the tube was pushed into the larynx at the base of the epiglottis; and in the other it had gone into the pouch of Morgagni. On the other hand, by going too low down, we come into serious dangers. The thick plexus of thyroid veins; the occasional thyroidea ima; and even the innominate itself may give trouble: while the bulky thymus in children, though not dangerous to cut, comes more or less in the way. It occurred to me, therefore, after doing one or two tracheotomies, and after carefully dissecting the parts in a number of bodies at various ages, both injected and uninjected, to *select the isthmus* as the safest seat of the incision. To this I was the more impelled by watching the results of cutting the cricoid cartilage. It does not answer to cut the cricoid, for there is so much spring in the ring of the cricoid that the tube cannot be worn without a constant irritation, it may be unfelt, but steadily leading to perichondritis and necrosis of parts of the cartilage. Twice I have tried to obviate this by *removing* a piece of the cricoid in cases where it was intended to wear the tube permanently: and this proved very successful. But, in merely splitting the cricoid, the result is not good if a tube is to be worn even for a week or two. In another case, that of a female, æt. 34, with acute infraglottic œdema, under the care of Dr. Sloan, I performed the low operation, but during it I had so much profuse hæmorrhage from the thyroid plexus of veins that I resolved to go higher up, and incised through the isthmus, with the best results. In the last five or six cases I have cut through the isthmus with the knife, and have had reason to be well satisfied with the easy access to the trachea and absence of hæmorrhage during the operation. Any hæmorrhage which is met with at this part of the air tube is from small arterial vessels which are readily secured by ligature or pressure forceps, and that gushing of blood from large and swollen veins in the thyroid plexus is avoided. The trachea is near the surface, and we have the useful guide of the firm resistant ring of the cricoid at the upper end of our incision, which, in very young children especially, is of considerable value.

The incision in the skin may reach from the level of the cricothyroid membrane to a point half way towards the suprasternal notch; and, in dissecting deeper, it is wise to use two pairs of dissecting forceps, one of which is held by the operator, and the other by the assistant; so that, with these, the tissue to be cut is steadily held on both sides before each

cut is made. Vessels are secured as they appear. Keeping in the middle line, the isthmus may be cut and the trachea exposed and, all bleeding being stopped, incised either with or without the aid of a hook to steady it. In inserting the tube, the point of the dissecting forceps is placed in the cut in the trachea, and the tube pushed along between the blades which open the trachea as the tube advances. No complicated instruments are needed, nor split tubes. A thin tenotomy knife, several artery compressors, a sharp hook, and two pairs of dissecting forceps are all the necessary instruments.

The tube once in, the after treatment is easy. No steaming is needed. If a single layer of dry gauze is loosely thrown over the face and neck, the air will be kept warm and moist enough for all purposes. It cannot be a good thing for a patient to have a chill fog playing over an open tracheotomy wound; and this is what happens when steam is blown even out of a hot kettle into the air over the patient. I prefer to have the patient near the fire, out of draughts, but with abundance of fresh air; and, therefore, without any tent of blankets over the bed.

One other detail I may mention, rather in explanation than as belonging to the operative procedure.

It may perhaps have been remarked that I have not used the word *croup* as applying to any of my cases. I have avoided it purposely; for it appears to me that the word croup is applicable to a symptom rather than to a disease or a pathological condition. Croup, so far as I can discover, means a hoarse cough with difficulty of respiration; and as this symptom may be caused by a variety of pathological conditions, I have preferred to state what in my opinion was the disease in each case. It seems to me to resemble very much the use of the word *cough*, which may be a symptom of several diseases; and just as we talk of pneumonia, bronchitis, &c., &c., all of which may cause cough, so we may talk of diphtheria, acute simple laryngitis, &c., &c., which may give rise to croup. That there is any one distinct disease to which the word croup can be fairly limited I do not believe; for, on the *post-mortem* table, according to my experience and reading, it always resolves itself into one or other of well recognised pathological conditions of the air tube. It is a useful word in a *clinical* sense, however, just as the word cough is also.

CURRENT TOPICS.

GLASGOW ROYAL ASYLUM, GARTNAVEL.—The annual meeting
of the contributors to this Asylum was held on the 13th
January, the Lord Provost presiding.   The Secretary read
the Annual Report, from which the following is taken:—
"The past year had been an uneventful one.   At its com-
mencement the Asylum contained 529 patients of all classes.
There had been 113 admissions, 93 discharges, of which 42
were recoveries, and 35 deaths; so that the number at the
close of the year was 514.   Of this total, 231 are private
patients, and 283 are chargeable to parishes, as against 226
private and 303 parish patients at the beginning of the year.
The wards for parish patients are so completely occupied by
chronic cases that it has been possible to admit only 14
patients of this class during the past year.   The directors
much regret that recent and curable cases of insanity, thus
occurring among the poor of the district, have, to a great
extent, been excluded by want of room, and the highest
function of the Asylum, which is the cure and not merely
the care of the insane, has, as regards pauper patients, been
almost in abeyance.   As regards private patients, on the other
hand, the admissions are 99 in number; and the patients of
this class have been more numerous than in any previous year.
Many of these are at low rates of board.   The pauper lunatic
is provided for by the rates, and the wealthy lunatic can
purchase whatever accommodation he requires; but when in
a family with limited means a case of insanity occurs requiring
asylum care, the providing suitable private accommodation
entails on them a heavy burden.   This class of cases has had
the careful consideration of the directors, and they have
adopted a reduced scale of charges as applicable to them.
The relief to the relatives of patients which has in this way
been given has been highly appreciated and gratefully
acknowledged.   The institution was twice visited by the
Commissioners of Lunacy in the course of the year, who
report that 'The Asylum is managed with great ability and
success, and the state of the wards and their occupants was
found in every respect satisfactory.'   Many important im-
provements have been effected during the year.   A substantial
stone wall has replaced the unsightly open paling which
separated the Asylum grounds from the parish road.   This
road is now so much frequented that patients walking in the
grounds were exposed to unpleasant scrutiny and observa-

tions, and the new wall, which is only six feet high, secures privacy without suggesting imprisonment. Telephonic communication has been established between the different divisions of the Asylum. The condition of the 'Hay Burn,' which runs through the Asylum grounds, has been a source of anxiety to the directors, and has received much consideration. They regret that it has been necessary to take legal steps to prevent its continued pollution by sewage from adjoining properties."

GLASGOW MATERNITY HOSPITAL.—The new building of this hospital was opened by the Lord Provost on 11th January. Mr. Grant, the Vice-Chairman, gave the following account of the movement for rebuilding the hospital :—" The hospital that had for a great many years stood on the site of the present one had been found very unsuitable for its purpose. Latterly it became what they called ' done.' It took a considerable sum every year to keep the roof in order. Dry rot set in and destroyed the house very rapidly, and latterly some of the medical men declared that they observed the odour of sewage gas on one or two occasions. Not only did the house become unhealthy, but it became too small to accommodate the number of patients it was thought it should accommodate, and he thought Dr. Russell ultimately reduced the number that could be accommodated to something like eight. In many other respects the hospital was most inconvenient. There was in it no fumigating chamber such as there was in the new buildings, and the lecture room, in which the students and nurses met, was totally inadequate. The house had frequently to be shut owing to outbreaks of disease. When it was open, dissatisfaction was frequently expressed as to the inadequacy of the accommodation, and, owing to the want of accommodation, they were charged with neglect in some cases. At last they found that both Dr. Russell and Mr. Carrick thought the place so unsuitable that they told the directors they would have to condemn it for use as an hospital of the kind. At that time, owing to an outbreak of disease the house had to be closed, and the directors, looking at all the circumstances, and considering the generous arrangement the Magistrates seemed disposed to come to, to place the Parliamentary Road Fever Hospital at their disposal, resolved not to occupy the hospital any longer. It was agreed to erect a new hospital, and to trust to the generosity of the public to defray the cost. The architect, Mr. Baldie, prepared a plan in accordance with his

own opinion, the opinion of the directors, and hints given by
Dr. Russell. A disinfecting chamber, the want of which was
so much felt in the old house, had now been secured, and they
had also got ample washing and laundry accommodation, and
a lecture room in every way suitable for its purpose. The
lecture room had a separate access. They could now accom-
modate something like 40 patients, though, of course, they did
not expect to receive quite so many. In such an institution
every care had to be taken that infectious diseases were not
introduced. There were apartments in the house for the sur-
geon and the nurses, so that the risk of any of them bringing
infection in with them was considerably reduced. The house
surgeon would be in the house night and day, so that he would
be at hand in any case of emergency. Two rooms in the upper
flat were available for use as a sanitorium. The cost of the
building was not yet known precisely. It was estimated to cost
£5,800, which, with £700 for furnishing, made £6,500. They
had with which to pay that, £5,832, including £4,132 received
from the public, and £1,700 of money belonging to the hospital
and lent to the Corporation, so that they were left with a
deficit of some £900. The directors had received power from
the subscribers to mortgage the building if necessary, but the
directors did not fear that the house would soon be free of
debt. After a few observations from Professor Gairdner, who
commended the work of the institution and the manner in
which it had hitherto been done, the Lord Provost proceeded
to declare the hospital opened.

The new hospital is erected upon the site of the former
one, at the corner of North Portland Street and Rotten-
row. The situation is a most eligible one. It is well elevated,
has a south-western exposure, and is well sheltered from the
north and east by the surrounding buildings. The style of
architecture adopted is early English domestic Gothic, plainly
treated. The sky-line is agreeably broken up by stone dormers,
rising above the parapet, and the general result is agreeable
and very effective. The principal entrance is from North
Portland Street, by a Gothic arched doorway with pediment,
having the Glasgow coat of arms and the dates when the
hospital was founded and rebuilt in raised letters. Towards
the Rottenrow the building rises to a height of three storeys
and attics. At the north end of Portland Street the height is
the same, a lower storey being brought in as the street falls to
the south. Dealing first with the accommodation outside the
main building, we may say that the outbuildings are com-
modious and complete. The entrance to them is by a large

gateway under the south end of the Portland Street front of the main building. The entrance leads into a courtyard paved with asphalt. The outbuildings are ranged along the west side of this yard, and consist of laundry, washing-house, disinfecting-room, &c. They are entirely detached and clear of the hospital. The floors of the offices are paved with Val de Travers asphalt. The lower storey of the main building is on the level of the courtyard, and is to be used as a lecture room for students. In the south lobby there are matron's parlour and bed-room, and the resident doctor's room, with bed-room and bath-room, and a small dispensary attached. Next the lobby, leading west, are the board-room and the reception-room, which is fitted up with a bath. The upper floor consists of sanitorium and bed-rooms for pupils, nurses, and servants. The lavatories for the several floors are placed in a wing behind, and are entirely disconnected from the main building, having a well lighted and ventilated lobby between them and the hospital cut off by double doors. The greatest care has been taken to prevent the formation or lodgment of sewage gas in any part of the hospital. The interior furnishings of the buildings are plain and substantial, and the woodwork is of yellow pine, all stained and varnished. The walls of the wards are all finished in plaster or brickwork, no lath or strapping being used. The floors are all pitch pine in narrow breadths, and stained and varnished. The walls and ceilings are painted in size colour. The windows are all double-glazed, the upper part hinged to fold inwards for ventilation, the upper and under sashes being double-hung. Over the doors to all the wards are hinged fanlights, so as to admit of a thorough current of air when necessary. The heating is by open fire-places and low pressure hot water pipes carried through the wards, round the lecture room, and also a coil enclosed in a case in the staircase. The fresh air is admitted by openings fitted with valves at the level of the floors under the windows, and is warmed by coming in contact with a hot water pipe before admission to the wards. The vitiated air is carried off by openings fitted with valves in the corners of the wards immediately under the ceiling, and connected by separate flues with a hot air extracting chamber, formed in connection with the chimney from the boiler of the heating apparatus. The coil of hot water pipes is so arranged that it can be used separately for summer ventilation when the other parts of the apparatus may not be required. The buildings have been erected from the drawings by Mr. Robert Baldie, I.A., architect, Glasgow.

REVIEWS.

Evolution, Expression, and Sensation, Cell Life and Patho-
logy. By JOHN CLELAND, M.D., F.R.S. Glasgow: James
Maclehose.

THIS is a small volume, consisting of six separate disquisitions,
which, however, as the writer takes care to point out in an
introductory chapter, are not entirely unconnected, since the
first five of them are devoted to subjects that bear one on
another, and have a more or less close relation to that of the
first of the series—namely, the "Evolutions of Organisation."
The sixth, if it has no relation in its matter to the others, has
at least this connection with the first that it is an academic
address; having been delivered at the medical graduation at
the end of last session, while the first in the series was the
opening address delivered at the commencement of the present
session.

The writer accepts the doctrine of an evolution in nature,
but differs from those of the present day who are distinctively
known as evolutionists, both as regards the character of the
evolution, that being in his estimation definite or the evolution
of a morphological plan, and as regards its source, which he
considers is quite unexplained by natural selection. But he
admits that such a thing as natural selection exists, and is
inclined to believe that its action may result during long
periods in an indefinite amount of variety—

"Development both in the individual and in the totality of
life is not only a development from a simple beginning, but a
development towards a completed whole. There is morpho-
logical design; and when in any line of development the
design is completed, the evolution ceases, although, by the
operation of environment or external circumstances, variations
may continue to occur and degenerations of diverse kinds may
take place."

The writer gives a short account of the history of evolution,
in which he points out that evolution, in the sense of the
gradual development of a morphologically complete total, was
the doctrine taught by Oken, who is acknowledged by Häckel
to be one of the fathers of evolution. Such an evolution, he
shows, was also believed in by St. Hilaire, who, while he
recognised an internal unity of plan in animal forms, was
among the first to suggest the effect of external influences in
producing new species. Lamarck, on the other hand, denies

the presence in living beings of any force other than what operates in the inorganic world, and while putting forward the doctrine of "appetency" to account for the origin of species, consistently believed also in spontaneous generation. It is pointed out that the author of the *Vestiges of Creation*, although believing like Lamarck in spontaneous generation, differed from him in believing that life on the face of the earth had passed through definite stages to a completed condition, precisely as an individual ovum pursues its course to the adult stage. The distinctive characters of the Darwinian theory the author considers to be that it holds evolution to be indefinite, and imputes great importance to natural selection as a factor in bringing the evolution about.

The Darwinian doctrine has, according to our author, "Precisely the same defect as the Lamarckian doctrine of appetency, only to a greater degree; it does not account for the formation of any new organ, nor for new organs appearing symmetrically. No doubt, on the 'je conçois' principle it may be made to lengthen and strengthen to any extent any number of structures already existing, and, potent for degeneration also, may be supposed to dwarf others, when they become incumbrances. Thus it is noticeable that in the series of forms preceding the limbs of the horse, a story on which so much is sometimes founded, no new structure makes its appearance; simply the third digits have enlarged in size, while those on each side have become smaller; and in the horse of the present day both the enlargement and the dwindling have reached a degree beyond which it is difficult to conceive them passing. I notice these circumstances though I am not prepared to dogmatise to the effect that it actually was by the sole agency of natural selection that the series of limb forms alluded to found an appropriate completion in the horse. But that natural selection should give rise to totally new and symmetrical organs is hard to imagine and impossible to prove."

"While the Darwinian system adds the idea of natural selection to the stock of hypotheses for explanation of evolution by external influences, it denies the existence of any definite evolution of organisation dependent on a definite cause. While it has the greatest faith in the power of the ovum to carry down the most minutely determined details of future development, it denies that there is anything apart from the accidents of external circumstances to direct the paths of the whole world-history of life, and thus shuts out of consideration the whole class of phenomena which were not only built on by Oken, but were patent to St. Hilaire, and

Owen, and Goodsir ; and it not only leaves both sex and
symmetry unaccounted for, but renders them inexplicable,
although they are matters obvious to every one, and pervading
the whole organic world."

According to the author, "Life is something else than the
sum of the chemical and mechanical operations engaged in
its manifestation. Its phenomena are no doubt mere move-
ment in space, and therefore allied to those of matter rather
than to those of consciousness, but they exhibit two closely
connected characters—development and heredity, to which we
find nothing analogous in the inorganic world. Crystallisation
is not analogous to development, for crystallisation is uniform
in its intimate parts ; whereas the essence of development is
the sequence of a definite series of forms entirely differing
one from another, and heredity is the transmission of this
remarkable property. While, then, the experiments of Pasteur
and Lister conclusively prove that there is no such thing as
spontaneous generation in the present ; the difference in
character between development and the laws of matter
makes spontaneous generation an inadequate hypothesis to
account for the first appearance of life in the past."

The general outline of the characters of the evolutions of
living beings is summed up in the following sentences :—" It is
a legitimate position to take up, that all the evolutions of nature
are definite, but that the series of such evolutions is indefinite
in number and kind ; that individual evolutions, like other
individuals, are finite, but form members of a larger total.
So, in the evolutions of organisation we see vortic units, the
textural elements, receiving and rejecting currents of material,
while they maintain, during a finite lifetime, their individuality,
and these united into larger individuals subject to the same
law. In the evolution of vegetation, which everywhere
exhibits definite individuals, or organs, structurally united in
indefinite series, the highest groups are composed of compound
individuals, in whose structure the most complex and in every
way highest evolution occurs in connection with the highest
vegetable function, the perpetuity of the series of finite
individuals ; and, the flower once perfected, evolution has
ceased, though variation continues. In the animal kingdom,
as has been long appreciated, even from the ovum the part
devoted to vegetal function has its surface turned inwards,
and the complexity of the animal sphere, which is wrapped
around the vegetal, takes place in connection with the con-
scious faculties. By the ministry of sensation and voluntary
movement, the food is introduced into the specially vegetal

parts, while, in connection with the perfecting of those animal functions, a process takes place such as in the vegetable kingdom is seen only in the flower—namely, that the portions, whether segments or organs, become more definite in number, more fused and compact. Thus, the largest feature in the evolution of both plants and animals consists in that which is simple passing into the manifold, and the manifold being compacted together in a higher unity. These evolutions are subjected, in the vegetable kingdom, to the service of nutrition and reproduction; while, in the animal kingdom, nutrition and reproduction give way in importance to the devolopment of intelligence. And, however imperfectly zoologists may yet agree as to the evolutions in detail in different parts of the animal kingdom, it is plain that, in the human form, an organism has at last appeared, constituting an abode of intelligence such as exists in no other, and that in man alone intelligence reaches the capability of ascending beyond the wants of the physical organism in the contemplation of abstract truth."

Among the evidences of the place occupied by spirit in nature, the author counts that which is afforded by what he terms symbolic correlation as highly important, and the demonstration of the existence of symbolic correlation he seeks to establish by an analysis of human expression.

Speaking of C. G. Carus, he says :—" He so far appreciated the relation of the segmented invertebrata to the vertebrata as to perceive that, while in certain lower forms the nervous system completed a circle round the mouth, in the invertebrate segmentata the nervous centres were concentrated on the under, and in the vertebrata on the upper side; seeing in this what Oken had already observed through the organic world, and what so skilled and accurate an observer as Dana has more recently recognised in this very matter, a system of expression in nature, according to which things of highest dignity are placed uppermost."

The second article in the book is entitled "Symbolic Correlation in Expression," and the meaning of the term is explained thus :—" I observe, first, that words indicating position and quantity represent ideas relating to both the physical and mental world. Secondly, emotions expressible by such words are indicated by the attitudes, gestures, and movements of body expressed by the same words. Thirdly, the same principle is applicable to movement of feature."

The following, from among the illustrations given of the two latter propositions, make the meaning clear :—" If an

artist wished to express sympathy, he would bend the figure forwards toward the object of the emotion, with the fingers stretched in the same direction, as if ready to help, and the palm probably inclined downwards, as if in token of protection, but not because there is anything actually to be covered by them.

"In exercising authority, the body is raised to its full height, because the moral attitude is one of superiority, and the hand may be brought down to indicate that opposition will be dealt with in the way which, in the symbolism of language, is expressed as 'put down.' Again, a speaker, in explaining his views, may bring the fingers of one hand down on the other, as if he were producing a visible object and placing it on his hand before you, or were pointing to a visible statement on paper, the downward movement not now giving the idea of destruction, but of that which is symbolically called 'laying down' his propositions."

"It is palpable that, in feelings of elation, the angles of the mouth are raised; the upper eyelid also is drawn well up, the eyebrows are lifted, though not sufficiently to produce the slightest wrinkle of the brow, and even the lower eyelid is raised, partly by contraction of fibres of the *orbicularis*, partly pushed by the rising cheek. Nor is elevation the only movement; but nature expresses the expansive feeling, the tendency of gladness to widen its scope, by an outward movement. The angles of the mouth spread more outwards than upwards, and as elation is carried further the mouth begins to open. The apertures of the eyes are not as capable as the mouth of outward enlargement; but to them also the appearance of greater breadth is given by the formation of lines spreading outwards and upwards from the outer angles."

"Under the influence of the depressing emotions, the same parts are depressed which were raised in smiling; and the apertures of the face, the openings of communication with the world, are diminished as the soul retires from its disagreeable surroundings. The brows, the eyelids, the alæ of the nose, but most of all the angles of the mouth, are lowered in all expressions of sadness."

The third and fourth essays of the series are devoted to sensation. One, entitled "Vision," is published for the first time; the other, "On the Physical Relations of Consciousness, and the Seat of Sensation," was read some years ago at the Liverpool Meeting of the British Association, and afterwards published in the *Journal of Anatomy and Physiology.* In it the author distinctly declares his opinion that the ordinary

theory of sensation is controverted by anatomical facts, and that it is not possible that irritation conveyed to the brain can be referred by the mind to parts at the periphery, inasmuch as such arrangement would necessitate separate communications between the brain and every separately appreciated point of the surface of the body, a state of matters which, in his opinion, is demonstrably not the case. But we need not here discuss the matter, as those who would understand the argument must read the whole papers, and form their own conclusions, whatever these may be. The lecture on "Vision" is written in a style less technical—more adapted, perhaps, to those who, while interested in the subject of sensation from a philosophic point of view, are yet not professedly familiar with biological detail.

We need not here trace the argument of the writer to prove that "the ideas of time and space become the means of unifying the results of sensations incomparable in their own nature; so that the hand, the eye, and the ear combine to increase the common stock of information." But it may be mentioned that, among questions purely biological, the physical antecedents of sensation are dwelt on; also, the rise of vision in the animal kingdom, the comparative anatomy of the eye in various invertebrate animals, and the relation of the vertebrate to the invertebrate forms of eye; and, in treating this last subject, he finds opportunity again to animadvert on the inadequacy of the Darwinian explanation of evolution. In reference to the appreciation of the inverted images on the retinæ, as an upright landscape outside the body, the following passage occurs:—"In the case of touch, the sensation is referred to the spot where the stimulus is applied. In the case of vision it is referred, not to the spot where the ray of light falls on the inverted picture in the back of the eye, but to a point outside the body, and placed in the direction from which the ray has come. That is certainly the case, however inexplicable; although it is true that the recognition of distance is learned slowly by experience. Were the landscape at birth perceived as a pair of minute inverted pictures lying inside the head, it would be impossible for a new born animal to learn that they were indices of a world outside; and it is curious that physiological writers have not always noticed this, but have tried to explain how two inverted pictures, spoken of as if they were outside the body, are rectified and made one."

In the fifth article the author treats of the changes that have taken place in our conception of nucleated cells; or, as

he prefers calling them, nucleated corpuscles, showing how the importance of the cell wall was formerly over-estimated, while the protoplasm was the last part to attract attention. At the present time he thinks that the importance of the protoplasm may be exaggerated; and alluding, no doubt, to the celebrated definition, "Life is the chemistry of protoplasm," he says:—
"To speak of life, as is sometimes done, as if it were an inherent property of a particular chemical substance, is surely going too far, and is a view which has nothing true in it which is not more than thirty years old; for it has long been familiar to every one that life never exists without the presence of nitrogenous substance of an albuminoid character; and, though it has since been discovered that life, in various instances, exists in non-nucleated structureless masses of protoplasm, that is a very different thing from life being a property of protoplasm."

Again he says:—"Protoplasm is simply a convenient name to use in speaking of the pulpy nitrogenous substance of vital corpuscles; but it is not to be forgotten that the substance referred to is variable in appearance and behaviour, as is well illustrated by Heidenhain's observations on the differences in both salivary and gastric secreting corpuscles in states of activity and rest. How, then, shall we say that, in its different conditions, the material which constitutes the mass of such corpuscles is one and the same chemical substance? We shall, indeed, take a very imperfect view of the living units, to which an unhappy chance has given the unfortunate name of cells, if we say that because neither cell wall nor nucleus is an essential element, therefore life is a property of protoplasm. It was recognised by observers long ago that the bond of connection between the bodies which they described lay not in a detail of structure, but in the possession of one or more of the vital properties—irritability, growth, or reproduction; and the observations of later years do not overthrow that conception, but afford it additional support."

The possession of vital properties he considers to be a very different matter from mere chemical composition. "The vital powers may be enumerated as irritability or sensibility, contractility, nutrition or elaboration of substance, and reproduction. All these properties are possessed by an amœba and by amœboid corpuscles. But every separate living organism does not possess them all; there are individuals without reproductive power. In like manner, all the vital units do not possess, throughout life, all vital properties; but, *in the process of differentiation, one property becomes exalted, while another*

is lost. Muscular fibres, nerve corpuscles, the corpuscular elements of peripheral nerve terminations, and secreting corpuscles illustrate this. All of them have lost the reproductive power; muscular fibres have exalted contractility, nerve terminations exalted sensibility, and secreting corpuscles a highly developed elaborating power. In brain corpuscles the proliferating power may reappear in pathological circumstances, but it does so at the expense of the specially developed properties. In muscular fibre it appears to be lost altogether."

He distinguishes between the life of the tissue element and the life of the organism, and believes that this distinction is not sufficiently recognised. "The mere tissue-life in individual corpuscles will not account for the phenomena of development without the addition of a larger life or a formative principle common to the whole individual; and it would be of incalculable advantage in the just conception of pathological phenomena, if the central and tissue lives were more generally distinguished than they are. No one has yet reduced, in a satisfactory way, any of the properties above mentioned as belonging to corpuscles—namely, irritability, contractility, nutrition, and reproduction, to the laws of unorganised matter; and having regard to that circumstance, and to the complicated phenomena of development of higher organisms, exhibiting series of changes unlike anything in the organic world, it is legitimate to conclude that, in living beings, there is a superadded element acting on the textural unit individually, and that such an element controls likewise the development of the organism. The neoplasms of the pathologist afford abundant examples of corpuscular life breaking loose from the central control, by means of which it is utilised in health for the construction and continuance of definite organs.

"Still proceeding on the principle of life within life, we may go further, and assert that a larger life, or series of developmental changes from a simple origin to a definite goal, may be observed in the evolution of all animal forms in the history of the globe. Such a doctrine alone is capable of explaining all the facts of morphology, and giving to the speculations of Darwin the backbone which they require."

The last article of the book, a graduation address, entitled "Truth, Pathology, and the Public," after discussing the greatness of the difficulty of arriving at the goal of perfect truth, either in social affairs or in the form of scientific accuracy, takes up specially the difficulty of arriving at a

sound pathology, and the impossibility of a practitioner
keeping up his efficiency without frequent correction of his
errors and corroboration of his diagnosis when correct, by
means of *post-mortem* examinations.   In this matter the
author considers public health at stake, and legislation as
well as public sentiment greatly to blame for the mistakes
which may be made by medical men.   The returns made by
the Registrar-General, of the causes of mortality throughout
the country, are, in the eyes of our author, a mere hollow
delusion, a manifest hypocrisy and a waste of public money,
being compiled from the imaginative statements of prac-
titioners who have not, in the great majority of cases, ascer-
tained by *post-mortem* examination if their ideas are founded
on fact.   But he not only believes that encouragement should
be given to much more frequent *post-mortem* examination,
but he thinks that the results of such examinations should
be much more frequently and methodically preserved than
they are, and cherishes the pardonable ambition that the
University with which he is connected, situated as it is in
the centre of a large population, should become a great centre
both for pathological teaching and for a pathological collec-
tion that might do honour to Scotland.   We may conclude
this summary by quoting the sentences in which those various
opinions are briefly put forward.   " The public has to learn
that an unskilful practitioner is simply a waster of human
life, and that the public itself is but a bad judge of the
waste of its own life which may take place.   The popular
prejudice against a custom thousands of years old in royal
families is the cause of an enormous annual slaughter among
all ranks, not the less real because it is impossible to compute.

" It may be further mentioned, that it is at least supposed
that the government statistics, made at considerable expense,
of the causes of mortality, are of some use ; yet it is an obvious
fact, of which I have had abundant experience, that the returns
which medical men have, under compulsion, filled up, stating
causes of death, are in large part utterly worthless, not from
any wilful dereliction of duty on the part of members of the
profession, but because information is asked which they are
not in a position to give.   The schedules sent out by the
registrar for certification of cause of death ought to demand
whether or not a *post-mortem* examination has been made, and
the sanitary department ought to keep the results obtained in
cases where such examination has taken place, completely
separate from the comparatively worthless returns of cases in
which there has been none.

" Moreover, when it is considered what pains are taken to secure accurate returns of causes of death in the army, and when it is remembered what a very large number of the practitioners engaged in civil practice hold appointments in a great variety of public institutions, one would think that it only required a proper knowledge of the issues at stake to rouse the public to the consideration of its own safety, and to extend in some measure military methods to civil practice, so as to develop a more thorough knowledge of their profession among all ranks of medical men, and save the lives of rich and poor.

" I desire to use this opportunity to say one word about pathological museums. They are the means of furnishing permanent and accessible records of remarkable phenomena, and are even more useful in affording comparison of different stages and varieties of disease one with another. There are no doubt certain matters connected with the general appearance of morbid textures which are better observed in the recent condition; but there is much more which cannot be seen to advantage, nor indeed studied at all, except in carefully designed preparations permanently preserved.

" Now, the great promoters of the art of displaying structure without desiccation were William and John Hunter, two Lanarkshire brothers. The museum of John Hunter, the property of the College of Surgeons, London, is continually and abundantly added to in a manner which would be highly satisfactory to its founder. The museum of William Hunter, a wonderful collection, embracing books, engravings, paintings, coins, and objects of natural history, was bequeathed to this University, and finds in Professor Young an enthusiastic curator; but its circumstances are most unfortunate as regards its anatomical and pathological department, the department which is most closely connected with the reputation of its founder. This interesting collection, made by the elder of the two brothers, who had the merit of teaching to his younger brother the art, is not, like the collection of John Hunter, a living centre which gathers to itself the best of present work; and this University is at the present moment almost powerless to make it so. But there can be no doubt that Glasgow ought to be the seat of one of the finest, most actively increasing, and most useful pathological collections in the world; and when I think of the public spirit of this great city, and the enlightened character of those who have it in their power to bring this about, I cannot doubt that the time will rapidly come when a great and successful effort will be made, by the

supply of funds and by proper combination, to give to a science so important for the direct interests of the public as pathology is, the support in Glasgow which it ought to enjoy. We require much extension of accommodation in our medical school, so rapidly do the wants of medical teaching develop ; and a special representation of pathology on our staff is greatly to be desired, as well as an united medical museum, to which not only students may have liberal admission for purposes of study, but medical men may resort from all parts, both for their own immediate benefit and also to help them in work by which they may enlighten others."

Lectures on Syphilis of the Larynx. By W. MacNeill Whistler, M.D., M.R.C.P. London: J. & A. Churchill. 1879.

This work consists of two lectures on the secondary and intermediate stages of syphilitic lesions of the larynx, and it includes tables of cases observed. It is well written : and if it be somewhat minute and in places seemingly redundant in detail, this is accounted for by the nature of the investigation, the object of which is to define if possible the limits and points of distinction between simple and syphilitic lesions in these stages of the disease. The author justly observes that it is only since the introduction of laryngoscopy into medical practice that these lesions have been exactly studied, and their course and tendencies defined ; for *post-mortem* research in such cases is only capable of determining the most advanced and coarser effects of syphilis of the larynx. After giving an account of the previous observations published by various authors, Dr. Whistler defines the syphilitic lesions of the larynx in the secondary and intermediate stages as—

1. Catarrhal congestions simulating those arising from simple causes.

2. Congestions accompanied by *diffuse redness and swelling.*

3. Mucous patches of various types.

4. More chronic inflammations, occupying, as it were, the period of transition, the signs of which are—*diffuse redness, thickening,* and *ragged ulceration,* especially of the vocal cords.

He intones the fact of the occurrence of accidental congestions of the larynx liable to occur in any one, but points out that, if they accidentally occur in a syphilitic patient, and

are neglected, they are apt to assume the characteristic type of that disease. Also, he takes care to warn against the promiscuous use of mercury, &c., for accidental simple catarrhal states of the larynx in the *later stages* of half extinct syphilis, affirming very justly that then the catarrh will yield to simple treatment. But, in the secondary and intermediate stages, special treatment is necessary.

The second lecture is devoted to the relapsing ulcerative laryngitis of the earlier and intermediate periods. In cases of this sort, the ulcerative laryngitis will extend over a year or two in successive attacks, and, if neglected, these attacks may run on into the deeply destructive lesions of the tertiary period. A description is given of the differential diagnosis between these ulcers and those of tubercular nature.

In treatment, Dr. Whistler relies on mercury, never pushed to salivation, but tentatively given till the lesions disappear, then continued a little longer, after which a pause is to be made in the treatment, followed by a short course of mercury, for a month or six weeks, to complete the cure.

The form he is most in favour of is blue pill, one or two grains combined with opium three times a day; but the changes may be rung on all the modes of giving mercury, with or without iodide of potassium, tonics, and fresh air, &c., &c., according to the case. The author does not put much reliance on cure by iodide of potassium alone, the last sentence in the book telling us that, "If you rely upon iodide of potassium alone, I fear you will, at best, only relieve and not cure your patient."

We can only say that, whether we agree with the whole of the statements in them or not, we rise from a perusal of these lectures feeling that they are the result of solid work and study, and as such we commend them to our readers.—D. F.

The Surgeon's Pocket Book: an Essay on the Best Treatment of Wounded in War. By SURGEON-MAJOR J. H. PORTER. London : Chas. Griffin & Co. 1880. Second edition.

THE short and business-like preface to this second edition is dated from Cabul, September, 1879, whence came soon after the sad news that the author had died at his post of Principal Medical Officer in charge of the Cabul force. To the experience gained in the Crimea, Indian Mutiny, and Franco-German war would have been added the more extended views of field surgery, gained by seeing the actual working of his matured ideas in the Afghan Campaign, and we might

reasonably have looked forward to a third edition even more complete than the present. The untimely end of Surgeon-Major Porter has deprived medical science, as well as the army, of a valued worker.

As compared with the first edition, the object of compactness and easy reference is kept steadily in view in this edition, and the interpolation of new matter has been rigidly restrained within the closest limits. There are twenty-eight pages more added to the work, but as these include the discussion of such subjects as the transport of wounded in railway trains, the use of telegraph wire in extemporising splints on the field, &c., the imperceptible increase of bulk is fully justified.

Throughout the book the opinions of authorities are succinctly quoted, a brief commentary by the author connecting and amplifying them. This relieves the possible tediousness of continued dogmatic statement, and, at the same time, obviates the necessity for argument on the part of the writer.

The chapter on injuries of the skull contains much that is interesting. The extreme rarity of fracture by " contre coup " is commented on. Of 12,980 injuries of the head during the American War of the rebellion, there were only two cases recorded of this peculiar injury. We doubt whether the theory of this rare fracture generally given—viz., that currents of force transmitted round the skull and meeting at the opposite side there rend the skull, be not a purely fanciful one ; and we are inclined to think that the few cases of this fracture, if carefully considered, might prove to be due to a more simple mechanism.

Dr. Porter considers the trephine to be inferior to the elevator, Hey's saw, and the chisel and mallet, for the purpose of removing the cause of compression in fractures of the skull ; and he is in favour of early operation where causes of irritation are to be removed.

The reference to antiseptic dressings of gunshot wounds, at page 59, is bald and imperfect, and no doubt it would have been extended in a third edition. Even in amputations it is recommended only for fixed hospitals (page 181). But surely there are forms of antiseptic dressing suited for field work as well as hospitals of a more settled type. Apart from points such as this, however, which may perhaps have appeared too controversial for a work of this class, the perusal of Surgeon-Major Porter's book is instructive and interesting always, while much of the information it contains is available for civil practice. We can heartily recommend it as a reliable and useful guide and remembrancer in emergencies.—D. F.

Index-Catalogue of the Library of the Surgeon-General's
Office, United States Army. Authors and Subjects. Vol. I.
A—Berlinski: with a List of Abbreviations of Titles of
Periodicals Indexed. Washington: Government Printing
Office. 1880. Pp. vi-888.

WE owe this remarkable contribution to medical literature to
the energy and industry of Dr. J. S. Billings, the librarian,
and to the liberality of the United States Government in
issuing such a work.

If it can be carried to a successful completion, we may
regard it as the most important contribution to medical
literature yet made by our American friends. One may well
hesitate in speaking of the completion of such an under-
taking; but, in many important respects, the difficulties
encountered in beginning such an index - catalogue will
become less as the work is fairly started and certain
definite lines of action come to be laid down for future
guidance in a printed volume. We are glad to see, also,
from the preface, that there is at least one other actively
interested in the execution of this stupendous undertaking,
as this affords the more hope of its being successfully
carried through.

It may be explained that this *Index-Catalogue* deals with
the contents of the Washington Library, which is now, we
believe, the largest medical library existing, and, at the same
time, one of the most valuable and important. Unlike most
catalogues of such collections, it includes, in the same
alphabetical arrangement, both subjects and authors. This
plan, although probably a good one for reference by the
public in general libraries, is seldom carried out where
accurate bibliographical details are aimed at, as it involves
much repetition, and renders exact references to subjects
somewhat more difficult from the diffuseness of the publica-
tion. It seems, however, that this method met with most
favour, especially among American physicians, and their
opinion was no doubt entitled to great weight in executing
a national undertaking.

But a more important novelty is introduced in this *Catalogue*,
inasmuch as it gives, under the headings of the various sub-
jects, not merely books, pamphlets, theses, and reprints existing
in the library, but also the articles comprised in the enormous
periodical literature contained in the library, so far, at least,
as these periodicals have been indexed. As this list of
periodicals occupies 125 large quarto pages, some idea may

be formed of the extent of the periodical literature thus classified.

"The present volume includes 9,090 author-titles, representing 8,031 volumes, and 6,398 pamphlets. It also includes 9,000 subject-titles of separate books and pamphlets, and 34,604 titles of articles in periodicals."

It is in this last item that the surpassing value of this *Catalogue* consists, as it is nearly equally available wherever a large collection of. medical and scientific periodicals may be found. It constitutes one of the first attempts to grapple with the modern development of our medical periodical literature, which has now attained such vast dimensions, and appears destined to go on with increasing rapidity.

With regard to the execution of the work, we can speak in the highest terms. The real merits or defects of such a catalogue can only be properly ascertained after some little practical use, and after a few more volumes are issued, so as to see the working of the cross references, which must, of course, be very numerous and very carefully attended to in such an undertaking. We have, however, looked over many of the most important headings, and both in this respect, and also as regards freedom from errors in printing, the execution seems to us worthy of all praise.

We hope that the energetic librarian may have life and health sufficient to see the completion of his *Index-Catalogue*, which will no doubt require other 15 or 16 of these large volumes.

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Sick Nursing at Home: being Plain Directions and Hints for the Proper Nursing of Sick Persons, and the Home Treatment of Diseases and Accidents in Cases of Sudden Emergencies. By S. F. A. CAULFIELD. London: "The Bazaar" Office, 170 Strand. 1880.

As this author remarks, there are now numerous manuals for hospital nurses, of various degrees of fulness and excellence, but there is still a want of any good manual for home nursing. We fear, however, that we cannot regard this little book as adequately filling the gap. In many respects we think it defective, both as regards the subjects dealt with and those omitted. There are, however, some passages which, as coming from a nurse's experience, have a certain value, so that those interested in this class of literature would do well to consult this little volume.

Contributions to Obstetrics and Gynecology. By ALEX. R.
SIMPSON, M.D., Professor of Medicine and Midwifery and
the Diseases of Women and Children in the University of
Edinburgh. Edinburgh: A. & C. Black. 1880. Pp. 347.

THIS is a volume of Essays on Obstetrical and Gynecological
subjects, together with cases in illustration. They have all
been published in one or other of the medical journals, and
are now gathered together for the convenience of the author's
students and fellow-workers. The book opens with a paper
on menstruation, delivered before the Edinburgh Obstetrical
Society as a Presidential Address. The author believes that
the fertilised ovum belongs, not to the last menstrual period
accompanied by discharge, but to the one which fails to
appear. "If we be correct in speaking of each ordinary
menstrual discharge as the accompaniment of the birth of
an unfecundated ovum, as many observations seem to indi-
cate, then we are forced to the conclusion, and I am quite
disposed to believe it is correct, that the fecundated ovum
of a normal pregnancy is a product of the period that had
become due, *and that has duly come*, though it be not dis-
tinguished by the occurrence of a uterine hæmorrhage." This
is the old theory of Pouchet and Tyler Smith, and commends
itself to one's belief in a variety of ways. The uterus prepares
itself once a month for the reception of a fertilised ovum, and
the breaking down and excretion of the prepared material is
the result of its disappointment.

In regard to the duration of utero-gestation in the indi-
vidual, the following remarks are made:—"If we are to make
the closest possible approach to the calculation of the probable
date of her confinement, we must, above all, have regard to her
own individual menstrual type, and ascertain what is with her
the usual length of a menstrual cycle. The ovum, which took
nine months of so many days to ripen within its ovisac, will,
after it has become impregnated, take the same number of
months to undergo its development within the uterus. We
have, therefore, to find out the number of days between the
commencements of the two menstruations that preceded con-
ception, and multiply the figure by ten; and, within a range
of five days, earlier or later, the birth of the impregnated
ovum will probably take place. In the round and rough, we
are safe in following the usual calculation of counting nine
calendar months from the date of the commencement of last
catamenia, and adding a week, because the greater proportion

of women have the 28-day type of menstruation, which closely answers to this calculation. But where we are specially anxious to avoid error, and to attain the nearest approach to accuracy, we must, I repeat, ascertain the individual menstrual cycle, and expect the delivery on some day in the decade, the central day of which corresponds to the date when the tenth menstruation should be due."

The details of a case of congenital goitre are given, where the child, contrary to what commonly happens, continued to thrive. In the remarks which follow, after discussing the various forms of treatment, the author concludes that "the sum of all our observations in regard to the treatment of congenital goitre amounts pretty nearly to this—that in the desperate cases we *can* do nothing, and in the milder instances nothing *needs* to be done."

In a good essay on Placenta Prævia, Dr. Simpson strongly recommends partial separation, and gives the details of a case where it was successfully practised. Under the head of post-partum hæmorrhage, an interesting case is related, where a woman died soon after labour, apparently from bleeding, comparatively small in quantity. On *post-mortem* examination, fatty degeneration of the heart was discovered, proving that, in the absence of such an examination, it is, in certain circumstances, unsafe to speak with assurance as to the cause of death.

In cases of abortion, where the uterus does not rapidly empty itself, the use of ergot subcutaneously and sponge tents are strongly recommended. These check the bleeding, and stimulate the muscular fibre into action. Afterwards, if necessary, the uterus is to be drawn down by means of a volsella, and the cavity cleared out with the finger nail. "When we have to do with a case of abortion, in which the stage of expectancy is clearly over, and the patency of the os internum, or the persistence of the pains, or the hæmorrhage long continued or profusely flowing, call for active interference, there are two main indications to be fulfilled—viz., 1st, to restrain the hæmorrhage; and 2nd, to procure the perfect removal of the ovum."

In a paper on the morbid conditions of labour, the subject of forcible expression of the placenta is discussed. The author commends Credé's method very strongly, quoting Bossi's statistics of the Vienna Hospital. In the wards where the new method was practised, the cases of post-partum hæmorrhage only amounted to 1·47 per cent, and the hand had to be passed into the uterus but once in 315 cases, whereas, in the

other wards, where the older methods were in use, the cases of hæmorrhage amounted to 3·52 per cent, and the hand had to be introduced once in 78. The author remarks—" in trying to follow out the process of Credé, we may require to exert very firm, steady pressure on the uterus with one or both hands. In the first cases in which I attempted it, I failed to effect the extrusion of the placental mass from the vaginal canal, which is an essential point in the procedure, simply from not making the compression with sufficient vigour."

There is an interesting case given of spontaneous rupture of the uterus during labour, in which the accident happened early in its progress, and was indicated by the pain changing from the back to one side, and collapse. The autopsy revealed a very great degree of fatty degeneration of the muscular fibre. The child was removed by gastrotomy, but animation could not be restored. The mother died of peritonitis sixty hours after the operation.

An important paper on " Turning *versus* Forceps," seeks to prove the theorems that " Where the anterior fontanelle is inaccessible, or difficult of access, turning is contra-indicated, forceps should be applied," and that " Low position of the anterior fontanelle thus forms the indication for turning."

There are two varieties of contracted pelvis which cause difficulty, the universally contracted pelvis and the flat rickety pelvis. It is shown that in the former, as labour progresses, flexion takes place, the head is elongated in the occipito-mental diameter, and the application of the forceps aids this form of moulding, which is also the least dangerous to the child. In the latter the conjugate diameter is shortened. The occiput is held up by the wide biparietal diameter and the sinciput comes down. If the forceps be applied, and the head grasped in the occipito-frontal diameter, such a grasp is dangerous to the child, and lessens the size of the head in the roomy transverse diameter of the pelvis, and tends to make it bulge in the conjugate where space is awanting. In this case turning is the proper operation, the after-coming head being then compressed only in its transverse diameter, and over-lapping of the parietal bones takes place.

Dr. Simpson recommends oophorectomy in cases of severe dysmenorrhea, accompanied by threatened insanity, epilepsy, or convulsions, as well as in intractable menorrhagia from uterine fibroids. He advises abdominal rather than vaginal incision. In speaking of the separation of the ovary by means of the

galvano-cautery, he echoes the common complaint that the apparatus is "very difficult to keep in working order." We think he would find six or eight Grove's cells almost free from this drawback, and sufficient to keep a long loop hot, even when sunk in the tissues, the difficulty of the nitrous fumes being got over by keeping the cells outside the door or window. On the whole, he is disposed to recommend the silk ligature and knife as the best means for securing the pedicle.

The book concludes with a chapter on the various means for comminuting the fœtal head in cases of obstructed labour, and the author describes and figures an instrument—the basilyst, for producing a dissolution of the bones at the base of the skull. If one imagines a powerful Simpson's perforator ending in a screw instead of a cutting point, a fair idea of the basilyst will be realised. It is intended that the skull should be opened by the ordinary perforator, and the base broken up afterwards by means of the basilyst.

By way of illustration there are fifty-seven woodcuts, some of them, as for instance Fig. 10, very poor from an art point of view, but serving very well the author's purpose in making the facts described in the text clear to the reader's mind. Others, such as Figs. 9 and 42, are very good, and the poorest is greatly better than none at all.

The outline of the female figure on page 322 is not well proportioned. The pelvis is too narrow for the breadth of the shoulders. According to Ramsbotham, "A line drawn from the head of the humerus, perpendicularly downwards, would fall altogether clear of the (male) pelvis; but in a well articulated female skeleton, the same line would rest within the ala of the ilium." In Maygrier's female figure, the proportion between shoulders and pelvis is 8–9, in Dr. Simpson's outline it is 11–9.

There is an air of earnestness about the book which makes its perusal pleasant. The reader feels as if he were discussing the subject in hand with one not only well read, but personally interested in it, and we cordially commend it to the attention of all concerned.

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

WESTERN INFIRMARY.
REPORTS UNDER THE SUPERVISION OF DR. W. G. DUN.

FROM PROFESSOR GAIRDNER'S WARDS.

CASE OF DILATED STOMACH—*Continued from March Number, 1879.*—In March, 1879, we reported a case of dilated stomach, in which all the physical signs and symptoms usually observed in such cases were present. The case was under Dr. Gairdner's care. The treatment adopted was the administration of salicylic acid, and mechanical emptying of the stomach, by means of the stomach pump tube, used as a siphon. A short trial of this treatment was followed by considerable improvement in the symptoms, and on leaving the hospital he was advised to continue it, being for a considerable time thereafter under the care of Dr. Campbell, of Dundee, who took much pains in directing the treatment. In October last he again presented himself at the hospital; he appeared to be in very good health, and stated that since leaving the hospital he had continued to use the tube and the salicylic acid, and had obtained so much relief thereby that he could not now think of discontinuing this treatment.

When in the hospital the tube was regularly passed every second day, but when seen in October he was using it only once or twice a week. As regards the salicylic acid, he spontaneously attributes to it the great diminution or suppression of gastric mucus, which used to block up the tube, so as to make its use difficult. The dose of the acid he gradually increased, until it usually amounted to 20 or 25 grs. in twenty-four hours, although at times he had taken as much as 40 grs. in the same period. He has never experienced any painful or evil effect from its use, even when he has taken the maximum amount of 10 grs. four times a day, for several days together. He made a trial of bismuth instead of salicylic acid, but found that it did not answer the purpose. Constipation, which had been an early and troublesome symptom, had ceased to trouble him, the state of the bowels being apparently regulated by the condition of the stomach.

Physical examination of the abdomen at this date (October, 1880), both by percussion and by succusion, failed to elicit any sign of dilated stomach.

Remarks.—The further account of this case is interesting as showing the value of this mode of treatment. The patient cannot be said to be cured, in the sense of being independent of remedies; but he is now in the position of being able to control the very troublesome symptoms, which formerly gave him so much annoyance. The use of the tube, no doubt, must be somewhat disagreeable, and it might be thought would require medical supervision, but in this case the patient seems to have acquired, though not without difficulty at first, the habit of employing it on himself, and the same is likely to be the case with any ordinarily intelligent individual in like circumstances. The benefits attributed to the salicylic acid were in the patient's mind quite distinct from those procured through the use of the siphon ; and he had no hesitation, accordingly, in acknowledging his dependence upon both remedies.

CIRRHOSIS OF THE LIVER, ATTENDED BY EXTREMELY SEVERE HÆMORRHAGES—HISTORY OF CASE, AND ACCOUNT OF POSTMORTEM APPEARANCES.—The patient was a woman, aged 35, in a respectable position in life, but who had been very much addicted to drink, and was admitted to the hospital on the evening of 11th December, 1880, apparently in a state of partial intoxication. She presented an exceedingly anæmic appearance, not without a hint of possible jaundice, but no actual yellowness of the conjunctivæ could be said to be present. On the morning of the 11th she had vomited a considerable quantity of blood, and about two hours after admission to hospital she again vomited about the same quantity of blood ; during the night vomiting took place at intervals, the matter ejected not consisting, however, entirely of blood. These were the first occasions on which blood had been voided by the mouth, or under circumstances leading to the belief that its source may have been the stomach. The first prominent symptom of illness, however, seems to have been about two years before the hæmatemesis occurred, when she had an attack of hæmorrhage from the bowels, which was thought at the time to be due to piles, but the result of a careful examination, made some time later by her medical attendant, gave no support to this supposition. Six months afterwards, a recurrence of this hæmorrhage took place, and lasted for two days, leaving her in a very exhausted state. No further hæmorrhage occurred till early in last year, when a very large quantity of blood was lost. Several attacks intervened between this and her admission to hospital, the last being especially severe, and characterised by fainting and

giddy fits, and even by symptoms immediately threatening life. The hæmorrhage, on all these occasions, was regarded as being from the bowels. And in the course of this long and exhausting illness she became pregnant, and vomited very frequently in the course of her pregnancy, without the slightest trace of blood ever appearing in the discharges from the stomach, even when the hæmorrhage into the intestines was actually in progress. In October last, swelling of the feet and hands was noticed; but even before the occurrence of hæmorrhage at all, there seems to have been œdematous swelling extending to the feet and hands, as well as to the face. During the period of extreme intestinal hæmorrhage, the liver appears to have been painful and very greatly enlarged, at least down to the umbilicus. At the date of admission this condition still existed, but not to the same extent, the whole organ being equally enlarged, and the hepatic dulness measuring in the vertical line $7\frac{1}{2}$ inches. No distinct nodules could be detected in the exposed portion of the liver, although there was a feeling of granular irregularity. In the left hypochondrium there was decidedly undue dulness, but that this was due to splenic enlargement was by no means certain. No distinct solid tumour corresponding to any part of the intestinal canal was discovered. The tongue was clean and pale, and there was no fever, though latterly a slight degree of fever was usually present. Only one observation of the urine is noted—viz., on 15th December, when albumen was said to be "abundant."

A certain amount of improvement took place in the condition of the patient during the first few days after admission. The vomiting and retching quite ceased, but she soon began to be troubled with enormous flatulent distension; ascites was also early detected, and afterwards became so much greater as even to suggest paracentesis, but for her obviously dying state.

On 21st December, blood was passed from the bowel on three occasions in considerable quantity. On 1st January, slight œdema of both feet was noticed for the first time since admission, and on this day also she vomited a great deal, but there was no appearance of blood. She also complained of severe pain in her right side. Her condition gradually became more prostrate, and on 14th January she was evidently sinking. Severe and continuous vomiting and retching set in; the abdomen was still tense and tympanitic on percussion, but the lower margin of the liver could not be made out; the œdema of the feet continued. The vomiting persisted throughout the

following day, but still with no appearance of blood, and on the afternoon of this day—15th January, she died.

As regards treatment, gallic acid was given during, and for some time after, the hæmatemesis. On 23rd December, after the discharge of blood from the bowel, turpentine was ordered, and at a late stage, when there was severe vomiting and retching, naphtha was prescribed, with compound tincture of cardamoms.

A *post-mortem* examination was made by Dr. Joseph Coats, who reports:—

The liver was distinctly small in size, but not greatly so, as it still weighed 43 oz. The surface was uniformly and finely granular, and the whole organ was remarkably pale. There was, however, an absence of the extreme distortion often seen in cirrhosis, and except for some flattening, the general shape of the liver was preserved. No blood or material suggestive of blood was found free in the stomach, but there were a few hæmorrhagic erosions, in which slight remains of blood were still visible. In the small intestine, about its middle regions, a large quantity of thick, tarry material was found. There was no breach of surface, and the most that could be seen was a trivial infiltration of the superficial layers of the mucous membrane occurring merely in one or two minute patches. There was no blood or anything suggestive of blood in the large intestine. The spleen was of normal size and consistence, and comparatively pale. It weighed $3\frac{1}{4}$ oz.

On microscopic examination of the liver, there was found an unusual extension of the inflammatory new formation, there being groups of round and spindle-shaped cells even inside the hepatic lobules.

Remarks.—In lecturing on this case in detail, Dr. Gairdner drew attention to the fact that although enlargement of the liver, as a prelude to contraction, was recognised by some of the authorities, while others considered hypertrophic cirrhosis and atrophic cirrhosis as two separate and distinct diseases, the present case afforded an opportunity of *clinically* observing the transition from the one to the other. Taking the woman's own statement into account, along with the more exact, but still not quite precise, observations made some months before the patient entered the Western Infirmary, and finally the measurements of the hepatic dulness, and position of its edge, &c., on admission, as compared with the condition of the organ as displayed at the *post-mortem* examination, no reasonable doubt can exist that in the course of three or four, or at most of six months, an enormously enlarged liver, which

to the patient herself felt like an inverted bowl in the hypo-
chondrium, and which may probably have extended consider-
ably below the umbilicus (therefore, in all probability, weighing
several pounds over the normal), became reduced to 43 oz. as
stated. Moreover, the latter part of this process occupied not
more than five weeks, at the beginning of which the organ
extended two-thirds of the distance between the hypochondrium
and the umbilicus, while at the end it was entirely buried
beneath the margin of the ribs. Several other important
clinical lessons were deduced from the case ; *e. g.*, the association
of *cirrhosis hepatis*, with severe and dangerous hæmorrhages,
due to the overloading of the portal system of vessels ; the
priority in time of *intestinal* hæmorrhage in this case, and the
later occurrence of *gastric* (contrary to what is usually ob-
served) ; the probable influence of these repeated hæmorrhages
on the spleen, which, instead of being notably enlarged and
congested, as is usual in cirrhosis, was found small and pale ;
the very late occurrence of ascites, which possibly was delayed
owing to the hæmorrhages ; the presence of anæmic cachexia,
but absence of true jaundice ; and the insignificance of the
symptoms prior to the occurrence of hæmorrhage. The
hæmorrhagic erosions found in the stomach after death prob-
ably belonged to the period of the hæmatemesis ; but a
considerable portion of the blood voided must have been
independent of these, and what was actually found after death
was in the coils of intestine remote from the stomach, and
quite apart from any evidence of ulceration. The treatment
afforded little opportunities for remark. Ergot and turpentine
were used, and appeared at least to check the hæmorrhage.
On the supervention of ascites, the patient was much too
exhausted to allow of the idea of paracentesis being enter-
tained.

GLASGOW ROYAL INFIRMARY.

REPORTS UNDER THE SUPERVISION OF DR. WILLIAM MUIR.

FROM DR. PERRY'S WARDS.

HEMI-ANÆSTHESIA FOLLOWING ERYSIPELAS. [Reported by
Mr. A. H. Guest, resident assistant].—A. M., æt. 33, married,
iron bed maker, admitted 4th December, 1880, with partial
loss of feeling of whole of left side. He is a delicate looking
little man, with large head, intelligent face, and sallow com-

plexion. Is much deformed with double knock knee, the right being the worse, and for several years, the weaker of the two. It was brought on from standing at a printing machine many hours a day, when he was sixteen years of age. Patient states that he was always strictly sober, and never had any venereal disease. Family history good, and free from nervous disease. Patient has always had good health up to his present illness, which began with "the rose" between left eye and ear, about four weeks ago. Ascribes the attack to standing in a draught. The blush remained for five days, and as soon as it disappeared, he felt some numbness on left side of head. This numbness slowly crept down left side, and reached toes in two days. He has slept very little since the attack. On admission, he complained of numbness and tingling down whole of left side, but most marked over fronto-parietal region. On blindfolding patient, and pricking him on any part of affected side, he could "just feel something," but was seldom able to find with his finger the part pricked. When pricked on abdomen, he would sometimes, though not always, point to the upper part of his chest. Occasional pains were felt in left arm and leg, severe burning pain at night a little below and behind left ear, and much pain, *on pressure*, in left fronto-parietal region. He had also constant pain, and sense of tightness in left infra-axillary region.

There is distinct loss of power in left arm and hand, so that he is unable to button his shirt. Right leg is weaker than left. Can balance himself with eyes shut on left leg, but cannot do so on right one. This difference is probably due to the right leg being more deformed, as mentioned above. The organs of special sense are all more or less affected on left side. Pupils of eyes are equal. Can see fingers of a watch two yards off with right eye, but can only dimly see watch itself six inches from left eye. Can hear watch tick a yard off with right ear, but in order to hear it with the left, the watch has to be actually applied to the ear. He can smell readily with right nostril, but on plugging it, is unable to smell anything with left nostril, which is also scarcely at all affected on sniffing up strong ammonia. From the origin and course of the olfactory nerves, one might have expected to find the right nostril affected, and not the left, in a case like the present one.

Left half of tongue is convex, and feels much softer than right side. Can hardly taste sugar on left side. Sense of taste seems perfectly normal on right side. Protrudes tongue slightly towards left side. Has some difficulty in speaking

and swallowing. He has complete control over bladder and rectum. There is complete anæsthesia of the penis, and sexual appetite is almost entirely in abeyance.

Treatment.—Rest in bed. Plain simple diet. Four leeches to left temple and two behind ear. Pot. brom. ʒss at bed time (slept well after this), and pot. iodid. gr. xv, three times a day. When he had been in the ward twenty-five days a blister was applied behind left ear. He had galvanism applied to affected side since 5th January, 1881.

He became an out patient on 5th January, when feeling had nearly returned to left arm and hand as far as knuckles, and also to left side of head, face, and body. No change in left leg. Organs of special sense, except that of smell, were greatly improved.

15th January.—Patient much improved. Sensation almost completely returned to left arm and hand. Left fingers still feel rather numb. Muscular power of left arm is decidedly increased. On blindfolding him, it was found he could distinguish slight differences of temperature with left hand (the affected side) better than with the right. He can, however, note differences of temperature better with the right cheek than with the left. Sense of smell in left nostril almost gone. It is, however, affected by strong ammonia, which was not the case when first seen. His sight, hearing, taste, speech, and power of swallowing, are better. He can manage, though in a very bungling sort of way, to button his shirt. On putting a grain of quinine on back of tongue on left side he tasted nothing at the end of four minutes, but on putting same quantity on right side he felt it "awfu' bitter" in less than two minutes.

From Dr. Cameron's Wards.

SCIATICA—NERVE STRETCHING—CURE. [Reported by Quintin M'Lennan, M.B., C.M., House Surgeon.]—J. M'P., æt. 39, miner. This man was, after consultation, transferred from the medical to the surgical side of the Glasgow Royal Infirmary on 29th September, 1880, for the purpose of undergoing the operation of nerve stretching. He had suffered from sciatica for seven months, and all the usual medical remedies had been tried, but without giving the patient relief; when it had been decided to operate, the patient was unwilling to submit, and left the hospital to attempt work.

He was readmitted on the 12th of October, still suffering as severely as before. On the 22nd October, Dr. Cameron cut down upon the sciatic nerve, and having isolated it by means

of a metallic bougie, he stretched it with considerable force.
Next morning the pain from which the patient had suffered so
long was entirely gone. Four days after the operation the
pain returned with a severity almost as great as it ever had
shown previously, and was markedly more intense towards the
evening. In order to induce sleep, a draught of bromide of
potassium and chloral hydrate was administered, but without
the desired effect, and it was only after the subcutaneous
injection of morphia that three hours' sleep was obtained. On
awaking, the pain was as severe as ever, and next morning Dr.
Cameron re-stretched the sciatic nerve. During the day after
this second operation, patient still complained of pain, which
was relieved by injections of morphia. At 11·30 P.M. the pain
was nearly absent, and by the 30th of October was entirely
gone. The operation was of course done with all the usual
antiseptic precautions.

MEETINGS OF SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

SESSION 1880-81.

MEETING III.—3RD DECEMBER, 1880.

PROF. GEORGE BUCHANAN, *President, in the Chair.*

DR. FLEMING read a paper on THE DICROTIC NOTCH. The
explanation of the dicrotic notch being still a subject of con-
troversy, the author, remembering that it can easily be
produced in systems of elastic tubing, proceeded to investigate
the circumstances which influenced it in experiments with
such tubes, in the hope that they would lead to an explanation
of its causation in the living artery. As the result of numer-
ous experiments he, in the first place, found reason to believe
that none of the usually accepted hypotheses were tenable, but
that all the physiological and pathological variations could be
explained by considering it as a rebound from the cardiac end
of the aorta of a portion of the wave produced by the aortic
contraction itself, in the same way that when a Higginson's
syringe is compressed, one portion of the fluid is driven out at
the nozzle, the other after closing the valve of the influx tube

is reflected from it, and is also expelled from the orifice of exit. This was experimentally demonstrated by the marked increase of the secondary rise produced by the addition of a mercurial manometer to a part of the experimental tube representing the aorta, in such a way that immediately on the cessation of the injection of fluid representing the effect of the ventricular systole, the restoration of the equilibrium of the manometer caused an injection of a small quantity of fluid into the vessel, which, flowing in both directions, first aided the primary rise, and next was reflected from the cardiac end producing the secondary rise. A dilatation of the part of the tube corresponding to the aorta, compressed by weights, gave similar results.

From experiment, and physiological and pathological considerations, the author concludes that it must be admitted that the contraction of the aorta immediately succeeding its expansion by the ventricular systole, must produce a current of blood flowing *towards the heart*, as well as one flowing towards the periphery, and that this current inpinging upon the aortic valves, or their substitute, must be reflected, this reflection causing the secondary rise. The paper was illustrated by a number of tracings, printed copies of which were placed in the hands of the members of the Society during its perusal.

The paper is published in full in the *Journal of Anatomy and Physiology* for January, 1881.

The *President*, after thanking Dr. Fleming for his paper, remarked that he was rather disinclined to adopt his conclusions. For, though one could understand how a wave could be dashed back from a wall or from a syringe, it must be remembered that in the aorta the wave is produced immediately at the valve, the aortic valve being actually at the place where the contraction occurs, and not, as in the syringe, beyond it.

Mr. John Reid thought that the dicrotic pulse was illustrative of the old "rebounding pulse." In the older authors the rebounding pulse was taken particular notice of, and was ascribed, not to one cause only, but to several. It is found in rheumatic fever, and in these cases it is often seen that bending the arm makes it more marked than when the arm is straight. It is found, too, in cases of hæmorrhage, and Mr. Reid had often produced it by bleeding, though not necessarily to any great excess, but sufficiently to cause relaxation of the arterial wall. It is also found in anæmic cases. Mr. Reid protested against the mechanical system of physiology which has crept in, as doing a great deal of harm by taking the

minds of students away from the vital action of the living body.

Dr. Barlow remarked that all physiologists were agreed that the dicrotic wave is produced in virtue of the elasticity of the arterial wall, and the only point in which they differed was as to whether the artery itself was capable of producing it by its elastic recoil without a valve to give a fixed point. Dr. Fleming has taken the view that the wave is due to the recoil from the aortic valve; and, on the other hand, Dr. M'Vail states that the oscillation of the arterial wall is sufficient to produce it. Dr. Barlow was prepared to unite the two, and thought he was supported by authorities in this. Dr. M'Vail objects to the aortic valve as a factor, because, when it is diseased, the dicrotic wave is still found. This is true, but it is then never well marked, and the valve is never so diseased but that it offers some resistance to the backward flow of blood. Then he claims that he has produced it without valves, but the piston in one experiment acted as a valve, and his finger closing the tube in the other.

Dr. Foulis asked if the state of the heart in the living body was considered in these experiments. It was movable and enclosed in a sac; the aorta was attached to it, but was not fixed so that when the heart contracts it would pull on the aorta, and thus influence the tracing. He also stated, with regard to tracings taken in pathological conditions, such as aneurism, that it was difficult to arrive at a conclusion, as in these cases the vessel was generally diseased also.

Dr. Hugh Thomson thought the notch was produced, not by a rebound, but by the absence of a rebound, by the falling back of the heart after the impulse given to the column of blood. As soon as this impulse is given, there is a recoil which results from the onward progress of the blood, and from the falling back of the heart, and allows the force of the contraction of the aorta to be felt upon the arteries farther on. The notch is due to the absence of the force, which is recovered again as soon as the heart has come to the end of its falling back, and then the contraction of the aorta comes into operation, following the normal distention of the artery. There are, of course, other circumstances in operation, but that is the main cause of the notch.

Dr. M'Vail remarked that Dr. Fleming's theory did not seem to differ much from that of the older physicians—those of last century. At first it seemed a plausible theory, as the second sound of the heart, due to the force with which the aorta shoots the blood on to the valves, is a very distinct

and strong sound, and it seemed likely that that force is strong
enough to send the wave along the vessels. But in strong,
healthy men, in whom the second sound is loudest, there is
almost no dicrotism. In fever, again, the first sound weakens
and disappears, and sometimes the second sound also, and yet
it is in these cases that dicrotism is most marked. If the
dicrotism had diminished simultaneously with the force with
which the valves are struck, it would have gone a long way
to support the theory, but it is the opposite. As to Drs.
Fleming and Barlow's statement that the piston in his experi-
ment acted as a valve, he thought consideration of the matter
would show the reverse. The valves, normally, are open till
the cessation of the systole, and then they are driven together
by the column of blood, and there is an oscillation produced.
In his experiment he had avoided that by having no valves,
simply using a rigid piston, driven down by a rigid handle,
which could not possibly give to the fluid, and thus entirely
avoided any oscillation or rebound. Dr. Fleming's method of
proving his theory was very ingenious; by producing a
second wave by means of what was equal to a second heart;
so that if there were 50 such pieces of apparatus, there would
be 50 such waves produced. It resembled a second contractile
apparatus introduced. Dr. Fleming said also that the arteries
of the body differed from tubes lying on a table, because the
transverse oscillations found in the latter are impossible when
it is packed among the tissues. In reality, however, the
abdominal aorta is practically as free as if lying loose on a
table, and the radial artery, being only covered by a little
connective tissue and the skin, is as if covered by the table-
cloth. To imitate the conditions found in the body he put
the tube into a cup filled with mercury, and, taking it for
granted that this mercury will entirely prevent any transverse
oscillations, says that all waves registered by this tube are
transmitted from its extremities. This assumption has not
been proved, and, in reality, it would need an enormous
pressure to prevent transverse oscillation, for the arteries
are distended with a force equal to 8 inches of mercury, and
this force is transmitted along them by their contraction.
The pressure necessary to prevent them would cause collapse
of the tube.

Dr. Gemmell remarked that he did not intend to say any-
thing of the experimental part of the question, for he thought
that had been ridden somewhat to death. Dr. Fleming's view
as to the method of production of dicrotism was the old one,
which had been generally accepted as having most to commend

it. He believed in it from clinical observation; for in cases of aortic disease the tension is diminished, a condition which should give the fullest degree of dicrotism, and yet in these cases the dicrotic wave is small; and in some, when the patient is young, and with no arterial degeneration, the dicrotic wave is almost entirely absent, and that not in a quick pulse, but with a slowly acting heart, in which each individual part of the heart's action should have been quite perfect. Another point is that in the athlete the arteries are in a state of high tension, their tension is highly developed, and their elasticity at a minimum; but the core of blood in the arteries acts as a buffer on the rebound, and there is only a small dicrotic wave registered. He also remarked that Dr. M'Vail's theory, though new to him, was broached as long ago as 1862 by Duchek, on theoretical considerations, in a paper on which he laid down that dicrotism was not due to rebound, but to contraction of the arterial wall.

Dr. M'Vail asked to correct a mis-statement Dr. Gemmell had made as to the fact of his theory having been broached by Duchek. He had read all that had been written on this subject in this country, and a great deal of that abroad, and had never come across Duchek's name, and had seen no reference to his paper. Dr. Gemmell had mentioned Duchek's paper to him about two months ago, but after the most careful search, he had been unable to find a reference to the paper or the paper itself; and he had not found any one who had heard of it.

Dr. Gemmell then stated that he had recently found the required reference in Lorain's work on the *Pulse*, and that an abstract of the paper was given, extending to several pages.

Dr. Fleming remarked as to Dr. M'Vail's syringe, that he thought it was as perfect a valve as could be got. A valve is something which prevents reflux of fluid in a tube, and the piston acts as a valve, and is all the more perfect because it does not admit of giving way to the fluid. Dr. M'Vail seemed to think the vibration of the valve had something to do with the production of the notch, but this theory is not now held. As to his (Dr. Fleming's) theory being an old one, he thought that though several theories approximate to it, none that he had seen were exactly the same. As to the damping out of vibrations, it must be remembered that in a fiddlestring the higher the note is the vibrations will be shorter, and more easily damped out; and similarly in the artery, the higher the tension the more easily will the vibrations be damped.

MEDICAL ITEMS.

UNDER THE DIRECTION OF

ALEX. NAPIER, M.D.

On the Abortive and Curative Treatment of Small-Pox.—"On the 16th January, 1880," says Dr. Bouyer, of St. Pierre de Fursac, "I addressed to the Academy of Medicine the following letter:—'I have the honour to forward to the Academy a sealed packet containing a formula for what I believe to be the curative and abortive treatment of small-pox, and which I have found very successful in six cases. When I have tried the treatment in a greater number of cases, I shall lay before the Academy the results of my investigation.'"

On 16th March, Dr. Bouyer had had fifteen cases, all confirming the efficacy of the remedy, and shortly afterwards he was pleased to make it known. The following is the formula recommended:—

Alcohol, 10-15 grammes $(2\frac{1}{2}$-4 ʒ).
Salicylic Acid, 1 gramme (15 grs.).
Simple Syrup, 20 grammes (5 ʒ).
Water, 50 grammes (2 ℥).

Of this a tablespoonful should be taken every six hours if the case is seen early, and every four hours if the disease is well advanced before the treatment is begun. Dr. Bouyer finds that under this treatment, commenced early, the eruption is discrete, or if confluent, the pustules are of small size, and contain little pus. They contract between the sixth and eighth day, leaving light furfuraceous crusts, which fall off in a few days without leaving either cicatrices or stigmata. The fever of suppuration is always greatly diminished.—*Journal de Thérapeutique.* 25th December, 1880.—J. W. A.

Dialyzed Iron.—In *New Remedies*, January, 1881, Mr. R. Rother makes some curious revelations regarding the manufacture of this favourite preparation. He says:—"The fact seems to be not widely known that the so-called dialyzed iron of the market is not prepared by dialysis. It is, nevertheless, the veritable article as produced by the dialytic process, but obtained by a much improved method, which dispenses with the diffusion drum. The new operation consists in mixing a small proportion of hydrochloric acid with washed ferric hydrate, precipitated by ammonia, and setting the mixture away for about three weeks, when the clear solution is decanted

from a slight residue, and is then ready for use. This knowledge, however, is so special, and is kept so sedulously secret by the manufacturing fraternity that a practical chemist of much experience, on entering another establishment, was laughed at for his simplicity when he proposed to make dialyzed iron by dialysis. The writer himself obtained this knowledge from one of the initiated only after having proposed his own method as being new and important, and as much superior to the manufacturer's process as this is to dialysis. He was at the same time informed that, if the factories were restricted to dialysis for their product, they could not begin to supply the demand, which shows that dialyzed iron must be very saleable goods." "The reason why ferric hydrate, precipitated by ammonia, dissolves so slowly in acids is that it is an oxyhydrate, which, in order to be decomposed by acids, must first be changed into the normal hydrate by the addition of a molecule of water. The dialyzed iron of the market is usually represented to contain a certain percentage of ferric oxide purporting to be in the colloidal or soluble state, no mention being made of any chlorine being present. Strictly speaking, however, no colloidal ferric hydrate or oxide really exists. The compound, in order to possess solubility, must contain a certain proportion of chlorine—that is, must be a hydro-salt. Deprive the dialyzed iron of its chlorine, and insoluble hydrate or oxyhydrate will result." As a substitute for what is known as dialyzed iron, the writer proposes "a solution of triferric hydrodichloride, equivalent in iron strength to the officinal solution of ferric sulphate." For the details of his process, reference must be made to the original paper.

Physiology of the Voice.—In a communication recently read before the French Academy of Medicine, M. Krishaber announced the following conclusions:—

1. The true vocal cords, apart from the adjacent cavities and structures, produce sounds of but very feeble intensity, the musical value of which it is very difficult to determine.

2. The intensity of these primary sounds proceeding from the vocal cords, is greatly increased by the pharyngo-buccal and naso-pharyngeal cavities, which form resonators.

3. The vestibule and ventricles of the larynx have no influence on the intensity of the sound. This, at least, was the case in the animal M. Krishaber experimented with, the larynx of which resembled that of man.

4. The voice acquires *timbre* from the same sources which

give it intensity, with this difference, that timbre is determined specially by the bucco-nasal cavity, its intensity by the pharyngeal cavity. To have a powerful voice, therefore, it is necessary to have a large pharynx.—*Bull. Gén. de Thérap.* 30th October, 1880.

Belladonna Poisoning Treated by Chloral.—The following case is recorded by Dr. Troquart. A man of robust constitution, 24 years of age, drank an infusion of a handful of belladonna leaves, which had been recommended as a cure for ringing in the ears. In half-an-hour he was seized with very acute pain in the stomach, great excitement, and vertigo. He then took some tartarated antimony, which produced emesis. When seen three hours after the exhibition of the belladonna, he was in a state of raging delirium, requiring four people to hold him down in bed. His face was red, bathed in perspiration, his eyes haggard, pupils dilated, and his whole body was convulsed. These fits of furious delirium lasted for four or five minutes, and were succeeded for a few seconds by a state of complete prostration, after which the delirium again returned. A draught of 60 grains of chloral was prescribed, but he could not be induced to take it. Some hours later an enema containing 75 grains of chloral was administered. Soon after he became calm, and fell into a profound sleep. As soon as there was the slightest appearance of a return of the excitement, more chloral was given by the mouth, and the patient awoke in the morning, suffering only from intense muscular fatigue.—*La France Médicale.* No. 46. 1880.—G. S. M.

Substitutes for Alcohol in Fevers.—Mr. Francis Vacher gives it as the result of his experience that alcohol is never necessary in the treatment of fevers, taking typhus as the type. In adynamic conditions, in which the main difficulty is connected with the state of the circulation, as indicated by a small, rapid compressible pulse, by a feeble heart-beat, by delirium with defective utterance, or by a high temperature with an irregular and intermittent pulse, or, finally, by a soft slow pulse and muffled heart sounds, his main reliance is placed on a mixture of decoction and tincture of cinchona with ammonia. This acts very satisfactorily; it increases the force of the heart and improves the capillary circulation, while it has the further advantage of not augmenting the natural tendency to coma.

In other cases, when the nervous system is most affected, the pulse being rapid, but firm, the skin dry, the mouth

parched, the head hot, the feet cold, and vertigo and noisy delirium being present, a condition which, if not judiciously treated, soon merges into another marked chiefly by subsultus, tremor, and hiccough, the stimulant which acts best of all is camphor. Under its influence the excitement is allayed, the headache abates, the skin is stimulated to perform its functions, and sleep is more likely to be induced than by alcohol.

Even if the patient be not seen till he is in that last stage which so often precedes death, when the surface is cold, "when carphology has given place to a mere trembling of the fingers, when the watching has been succeeded by stupor, when the anxious expression is fading from the face, and the dusky hue is deepening, when there is paralysis of the sphincters," Mr. F. prefers the compound spirit of ether with aromatic spirit of ammonia to everything else. It should be given in small and frequently repeated doses. For intemperate patients he trusts to camphor and ammonia, a drink of meal and camphor water, and chlorodyne or hydrate of chloral at night. For the treatment of rigors he prescribes, not hot punch, but hot drinks, such as a little syrup of ginger stirred up in hot water; for syncope, Hoffman's ether and ammonia; for hardness and dryness of the tongue, grapes and other ripe fruit; for gastrodynia, a careful revision of the patient's diet slip; for perspirations, sponging the body with dilute acids, and the internal administration of quinine in 2 grain doses, with or without iron; for inactivity of the kidneys, juniper and belladonna. As regards convalescents, he holds that plenty of fresh, sweet fruit is preferable to wine, and that malt extract feeds the patient and assists digestion better than beer or porter. Even plain cold water does much that alcohol is expected to do; "it is a diuretic, a diaphoretic, a febrifuge, and a great many other things besides."—From a paper read before the *Brit. Med. Temp. Assoc.* November, 1879.

Effect of Carbon Monoxide Contained in Tobacco Smoke.—Dr. Gustave Le Bon has recently performed a series of experiments with the view of determining the effect of the carbon monoxide in tobacco smoke, and has come to the conclusion that it is not to it, as has been lately stated in Germany, that the fumes of tobacco owe the greater part of their noxious properties. These are due, not only to the undecomposed nicotine largely present in the fumes, but also to some unknown compounds quite as poisonous as nicotine, to prussic acid, and

to a new alkaloid, of which he does not give particulars in the present paper.—*La France Médicale.* No. 49. 1880.—G. S. M.

Surgical Anæsthesia from Morphia and Chloroform.

—Dr. A. Crombie extols the combination of morphia and chloroform as a means of producing and maintaining surgical anæsthesia. His method is first to commence the administration of chloroform by inhalation in the usual way, and immediately afterwards to inject subcutaneously twenty minims of the ordinary liq. morph. hydrochlor. He finds that in this way the anæsthesia is much prolonged once it is established, and that a very small quantity of chloroform suffices to keep it up afterwards, half a drachm to a drachm being usually enough to keep the patient insensible for thirty to forty-five minutes. In long and difficult operations, especially about the mouth and face, this is no small advantage : thus, in removing the right upper maxilla, Dr. C. was enabled nearly to complete the operation without the further administration of chloroform from the time that the patient was declared "ready." Vomiting is rarely seen when this method is followed. Chloroform asphyxia also seems to be prevented. In 600 cases, Dr. C. has only once seen it, and in that instance some of the usual precautions had been neglected. Paralysis of the heart, too, is less apt to happen, the risk of the occurrence of this accident, and of asphyxia as well, being lessened in proportion to the smallness of the dose of the anæsthetic required to cause and reproduce the anæsthesia. It is pointed out that this method makes chloroform as safe to use as ether; and that in tropical countries, especially India, where operations have to be performed at a temperature very little below the boiling point of ether, there is practically no choice of anæsthetics.—*The Practitioner.* December, 1880.

Electricity in Asthma.—Dr. R. Schmitz reports (in

Deutsche Med. Wochensch., 20th November, 1880), a case of asthma in which the good effects of the induced electric current were manifest—the patient, a man of 40, having obtained no relief from any of the means usually resorted to in such cases. It was noticed that each attack was preceded by a catarrh which invaded successively the larynx, trachea, and bronchi; on the supposition that the pneumogastric nerve was probably subjected to pressure in its course by the swelling of the respiratory mucous membrane, it was determined to treat the nerve directly by electric currents. At the first *séance*, which took place in the evening, the electrodes were placed on the

sides of the thyroid cartilage, at the internal border of the sterno-mastoid muscle. The current, at first feeble, but subsequently gradually increased in intensity, was passed for nine minutes. The relief which followed was so marked that the patient slept the greater part of that night. Two applications of the current were made daily, for fifteen minutes each time ; after the twelfth application the asthma, and with it the bronchitic râles, had disappeared. A subsequent attack was readily cured without electricity. [Faradisation of the pneumo-gastric nerve must be set about cautiously, as, if the current employed be sufficiently strong, the heart's action may be definitely arrested.]—*Lyon Médical.* 9th January, 1881.

Thalictrine as a Substitute for Aconitine.—In the laboratory of M. Vulpian, MM. Boche-Fontaine and Doussons have been experimenting on the properties of thalictrum microcarpum, a plant belonging to the order Ranunculaceæ. From its roots they have extracted two substances, the one inert, *microcarpine*, and the the other an alkaloid, *thalictrine*, which constitutes the active principle of the plant. They find that thalictrine resembles aconitine in producing the different symptoms generally caused by that agent; but the phenomena of paralysis of the central nervous system, produced by the former, are more marked than those due to the latter, while vomiting and cardiac and respiratory affections are considerably less marked with thalictrine than with aconitine. Hence they infer that thalictrine might be used with advantage in nervous affections in place of aconitine. The poisonous dose of aconitine is considerably less than that of thalictrine, which is therefore more easily managed, and may be, on that account, of therapeutic value.—*La France Médicale.* No. 50. 1880.—G. S. M.

Foreign Bodies in the Nasal Passages.—Dr. Jorissenne advises that, especially in treating children, no attempt should be made to effect the expulsion of foreign bodies from the nose by forcible expiration, as a child invariably begins by making a deep inspiration, and in that way might carry the object further down into the air passages. The use of forceps should also, as a rule, be avoided. No method is equal to Weber's plan for irrigating the nares ; a weak solution of salt is thrown up the clear nostril, either by a syringe or through a simple siphon tube, the patient's head being held slightly bent forward ; reflex contraction of the pharynx causes the fluid to

return by the other nostril, by which means the foreign body is usually soon expelled.—*Bull. Gén. de Thérap.* 15th October. 1880.

Addison's Disease associated with Tuberculosis of the Lungs and Pott's Disease of the Spine.—The connection between Addison's disease and tubercular diseases is now commonly recognised, but the following case, recorded by Dr. Letulle, is of considerable interest:—The patient, a man 42 years of age, had enjoyed excellent health up to the age of 41, when he began to complain of pains in his back. The cause of these became apparent when, after two months, his vertebral column became deformed. About the same time his skin became anæmic and bronzed, ultimately showing several patches of vitiligo on a skin like that of a negro. Later on signs of tubercular mischief in both lungs set in, and the symptoms progressed rapidly. He died in about a couple of months after the first appearance of the bronzing of the skin. At the *post-mortem* examination, both suprarenal capsules were found to be considerably enlarged, very hard, and infiltrated with numerous tubercular masses, which were mostly caseous, while some in the right capsule had become calcareous. The kidneys were congested, and presented a few scattered tubercles. Two chronic abscesses were found in the neighbourhood of the suprarenal capsules, extending, the one from the eighth dorsal vertebra to the twelfth, the other from the twelfth downwards. There were tubercles in the spleen ; none in the hepatic substance. Both lungs presented abundant tubercles, especially the right. M. Letulle suggests that the affection of the suprarenal capsules may have been induced or aggravated by the irritation caused by the abscesses near them.—*La France Médicale.* No. 40. 1880.—G. S. M.

Books, Pamphlets, &c., Received.

A Treatise on the Theory and Practice of Medicine. By John Syer Bristowe, M.D. Lond. Third Edition. London : Smith, Elder & Co. 1880.

Lectures on the Surgical Disorders of the Urinary Organs, delivered at the Liverpool Royal Infirmary. By Reginald Harrison, F.R.C.S. Second Edition, considerably enlarged. London : J. & A. Churchill. 1880.

Atlas of Histology. By E. Klein, M.D., and E. Noble Smith, L.R.C.P. Part XIII, concluding the work. London : Smith, Elder & Co. 1880.

Demonstrations of Physiological and Pathological Chemistry, with a concise account of the Clinical Examination of Urine. By Charles Henry Ralfe, M.A., M.D. London : David Bogue. 1880.

Relapse of Typhoid Fever, especially with regard to Temperature. By J. Pearson Irvine, M.D., B.Sc., F.R.C.P. Lond. With Temperature Charts. London : J. & A. Churchill. 1880.

Ringworm, its Diagnosis and Treatment. By Alder Smith, M.B. Lond., F.R.C.S. London : H. K. Lewis. 1880.

Elements of Practical Medicine. By Alfred H. Carter, M.D. London : H. K. Lewis. 1881.

Consumption as a Contagious Disease, with its Treatment according to the New Views ; to which is prefixed a translation of Professor Cohnheim's Pamphlet, *Die Tuberculose vom Standpunkte der Infectionslehre.* By D. H. Cullimore, F.R.C.S.I. London : Baillière, Tindall, & Cox.

How to use the Forceps, with an introductory account of the Female Pelvis, and of the Mechanism of Delivery. By Henry G. Landis, A.M., M.D. New York : E. B. Treat. 1880.

A Practical Treatise on Tumours of the Mammary Gland, embracing their Histology, Pathology, Diagnosis, and Treatment. By Samuel W. Gross, A.M., M.D. Illustrated by 29 Engravings. London : H. K. Lewis. 1880.

A German-English Dictionary of Words and Terms used in Medicine and its Cognate Sciences. By Fancourt Barnes, M.D. London : H. K. Lewis. 1881.

Grundriss der Anatomie des Menschen, von Ad. Pansch, Professor an der Universität Kiel, mit 398 Holzstichen. Berlin : Robert Openheim. 1881.

Lectures on Syphilis, delivered at the Harveian Society, December, 1876. By James R. Lane, F.R.C.S. Second Edition. London : J. & A. Churchill.

Coulson on the Diseases of the Bladder and Prostate Gland. Sixth Edition. Revised by Walter J. Coulson, F.R.C.S. London : J. & A. Churchill. 1881.

Evolution, Expression, and Sensation, Cell Life and Pathology. By John Cleland, M.D., F.R.S., Professor of Anatomy in the University of Glasgow. Glasgow : James Maclehose. 1881.

A Directory for the Dissection of the Human Body. By John Cleland, M.D., F.R.S. Second Edition, revised and improved. London : Smith, Elder, & Co. 1881.

Good

1 Clinical
Clinical Eighteen

nty
2 Clinical
Clinical Eighteen

3 Clinical Eighty.

4 Clinical

5 Clinical

Narrow
6 Patholo Nocturnal.

Shadowing
7 Patholo

ORIGINAL ARTICLES.

ON THE PATHOLOGY OF WRITER'S CRAMP, WITH ILLUSTRATIVE CASES.

BY DONALD FRASER, M.D., PAISLEY.

(*With a Lithographic Plate.*)

THE remarks which I venture to make in this paper are based on the observation of three cases of the affection known as writer's cramp. These cases differ somewhat from each other; but all have, as their prominent feature, more or less spasm of one or more muscles necessarily employed in the act of writing. In other words, a particular interference with, or impairment of, the act of writing, of a mechanical nature, as distinguished from defects due to what are termed psychic causes. This condition, in its earlier stages, involves a difficulty in writing, which is recognised by the patient as due more to a volitional than to a muscular defect. He simply feels that his hand, in this particular act, carries out his will with great difficulty, or not at all. The co-ordination of the various muscles concerned in the complex act of writing is disturbed more or less seriously. The picture of the word to be written is as perfect as ever; the knowledge of the movements necessary to the formation of the letters as good as before; yet there is found at first a puzzling inability to form letters properly. When fully developed, this difficulty shows itself to be the result of a spasmodic contraction of one or more of the muscles of the hand or forearm.

A difficulty of this kind may be due to diseases of the most diverse kinds.   It is therefore necessary to exclude such cases as are due to coarse disease of the brain or spinal cord, or such local or peripheral disease as obviously interferes with the healthy action of one or more of the muscles of the hand or forearm, and which interferes with the normal action, however directed or combined.   For though, as is generally acknowledged, no two cases of writer's cramp exactly resemble each other, they have this in common, that while there is no paralysis, in the ordinary sense of the term, of any muscle or group of muscles, the disease is induced by writing, and is seen only in writing, or when certain muscles are engaged in a purposive act of a kind similar to that of writing.   There are other forms of this disease developed in connection with the overuse of certain groups of muscles, and known as "telegrapher's cramp or paralysis," "hammer palsy," and many others, named in connection with the special occupation or actions which, apparently through the effects of excessive repetition, bring about the overaction or spasm of certain muscles.   Before more particularly considering the pathology of this affection, we shall give the details of the cases referred to.

J. P., æt. 22, consulted me in December, 1878.   He was a commercial traveller, but up till about a year before his visit to me he had been a clerk, an occupation which he had been compelled to give up on account of having become affected with writer's cramp.

The first symptoms of the disease were observed about September, 1876.   For about two or three years before that time he had been working in his leisure hours at shorthand writing, at which he had become so proficient that he could write 110 words per minute.   He was also a very fast writer in longhand.   Early in the year 1876 he had been put in charge of the office in which he was employed, and this entailed a great deal of anxiety, though less writing than formerly. What first attracted his attention was that, contrary to the usual rule, he could think out the phonetic characters faster than he could write them.   He was not conscious of any undue sense of fatigue or pain in any muscle or muscles of his hand or arm.   His difficulty was that his customary free and automatic performance of the act of writing was interfered with, a difficulty which steadily increased until writing with his right hand became impossible, and this more particularly as the result of the spasmodic contraction of the index finger. He then acquired the art of writing with his left hand, but not

before he had tried many different ways of holding his pen. Amongst other plans he had tried folding the index finger upon the palm of the hand while he held the pen between the thumb and second finger, but still the index finger pressed so firmly against the side of the pen as to cause almost abrasion of the skin at the point of contact. It is important to note that he could hold a pen in the usual way without inducing any spasm so long as he did not touch the paper. Thus, in adding up a column of figures, with the pen held in the usual way and used as a pointer, he found no difficulty, until he made the pen touch the paper, or attempted to write. The only other action besides writing that he had any difficulty with was that of holding a spoon, as in taking soup, when he found it necessary to support the index with the second finger. He had been practising since June, 1878, at the pianoforte, and he informed me that he had no difficulty in manipulating the keys of the instrument with his right hand, nor with the index finger of that hand. There was no apparent weakness or paralysis affecting the muscles of the right hand, which acted normally in everything but writing, and such purposive and combined actions as resembled writing, or involved the use of certain muscles in a similar way. When such actions were attempted, spasm was at once induced. The disease appeared to have developed in connection with some degree of mental anxiety, in one given to quick and excessive writing. The only local influence which might possibly have had to do with the production of the complaint was that he had sprained his right thumb about three months before the time which he fixes as the date at which the disease began. The thumb remained swollen and painful for about a fortnight, during which time he was daily doing his work as a clerk.

When he first called on me he had been using his left hand for about a year, yet after this rest,* No. 1 in plate represents the best he could do with his right hand. The letters were formed very laboriously and with great effort, his progress being constantly interrupted by the necessity for replacing the pen which, with almost every down stroke was forced out of its position. The upstrokes he found specially difficult, as he evidently required a special effort to counteract the action of the interossei muscles of the first, and, to some extent, of the second finger.

* This patient appeared about this date before the Pathological and Clinical Society of Glasgow, and the word "clinical" given him to write then was continued for the sake of comparison, being changed to "pathological," when he got too familiar with the word.

Encouraged by the success obtained by Dr. Poore * in similar cases, I advised the regular use of the continuous galvanic current to the nerves of the arm generally, but more particularly to the ulnar nerve, with very gentle faradization of the muscles of the hand. He had used faradization for some time before, but in a very imperfect way and without benefit. I advised further, that he should occasionally practise, for a few minutes at a time, writing with a hair pencil; also writing in the air. In this way I hoped to be able to restore confidence in himself, and to re-educate the faculty of co-ordinating his muscles in the act of writing.

The result of the treatment is shown in the plate.

No. 1 was written on 4th November, 1878, at the beginning of the galvanization.

The second line in Nos. 1 and 2 was written immediately after the application of the current, and shows a slight improvement.

No. 2 was written five days later, and again shows an improvement in the second word written after the application. This temporary improvement after the application of the current was seen throughout.

No. 3 was written on the 30th December, 1878. No. 4 on the 16th February, 1879. The progress was slow, and often appeared to be very slight, but in No. 11 had obviously reached a point beyond which improvement could scarcely be expected. He now writes fluently with the right hand, taking the precaution, however, to keep the pen between the first and second fingers, rather than between the finger and thumb. When he writes in the ordinary way he can do it without the intervention of spasm, but feels that the up strokes require more effort than they should do, and that, further, the tendency is for his writing to slant downwards. He therefore still continues the treatment, so far as the continuous current is concerned, having some time ago provided himself with a Leclanche battery. The word "good" at the top of the plate is a *fac simile* of a specimen of his writing some months before the onset of the disease.

It should be added that the left hand, which he had been using before treatment was begun, soon after showed signs of failing, and ultimately became so bad that he was glad to resume the use of the right, now so far improved as to permit of this.

I have had the opportunity of studying this affection in its

* *Electricity in Medicine and Surgery*, by G. V. Poore, M.D., London, 1876.

earlier stages in the person of a clever and accomplished friend who is in good health, and accustomed to conduct a large correspondence, but who, for a year or two back, has been compelled to write as little as possible on account of increasing difficulty in the act. Often the will is strongly exerted to compel, as it were, the hand to write, and the difficulty complained of is inability to form the letters, such letters as *r* and *n* being represented by a short wavy line. There is, in this case, an evident tendency to spasmodic contraction of the thumb and right index finger, the latter tends to press over the penholder, and now and then causes a sudden downward jerk of the pen point. The pen is generally grasped with excessive tightness in the effort which writing involves. Rest to the hand from writing has here been of considerable value. On the posterior aspect of the left hand, where the cutaneous surface is supplied by the radial nerve, there has been a feeling of numbness and a slight impairment of sensation. In this case there never was what could be called excessive writing, nor was there at any time a sense of fatigue before the onset of the irregular muscular action, though there was, as might be expected, considerable difference between the formation of the letters at the beginning and at the end of a letter.

A. C., a grocer, æt. 38, an active, intelligent man, recently came under my observation, suffering from severe spasm of the flexor muscles of the right hand and forearm. This spasm was brought on by writing and acts of prehension where the hand required to be kept in a condition of flexion more or less similar to that required in writing. His first difficulty was felt about seven years ago, when he began to find his hand cramped in writing, so that the effort to continue the operation induced a strong sense of strain in the eyes and throughout the muscular system generally. About five years ago he had to give up using his right hand and learned to write with his left, which in its turn gave in after two years' work, though, it should be said, from an early period of the disease he had refrained as much as possible from writing. He has now gone back to the use of his right hand, and manages, when he does attempt to use it, to write a few words with effort before he is completely stopped by the development of the spasm, which flexes his hand at times so completely that the pen is in a position parallel to the line of the forearm. In weighing out sugar or similar articles, he is compelled, in order to avoid the spasm, to hold the "scoop" resting in the palm, which is directed upwards, his hand being in a state of supination. He thus brings the weight of the object, and the

extensor muscles, to bear in resisting the tendency of the flexors to morbid spasm.

In the case of his left hand the contraction of the fingers is followed by the forcible supination of the hand, or, as the patient puts it, the hand falls away and the pen drops out of his grasp. No. 15 is a fac simile of his writing, it is not very badly written because, at the onset of the spasm, he stops entirely. This man is and always has been healthy, and, so far as could be ascertained, has a good family history. At present he is pale and overworked looking, but this is due to the influence of serious family affliction. When the disease first attacked him he was a healthy and fairly prosperous man. His arms and hands are very muscular and well developed. There are no indications of paralysis or weakness of the extensors. The flexor muscles of the hand are particularly well developed. Tested with the compasses, his sensation over the fingers and front of forearm is normal. The electrical contractility of the muscles is also normal. He states that he always wrote a cramped and heavy hand. I ascertained further that, for the last year or so, he has been often waked out of his sleep by numbness or tingling of the third, fourth, and fifth fingers, and he states that this tingling affects only the external side of the third finger, but the whole of the others, except perhaps the external side of the little finger, which he is not sure of.

Before considering the pathology of the disease, I would refer to the specimens of writing marked 12, 13, and 14. They illustrate certain points of interest in connection with the nature of this affection.

No. 12 is a good specimen of ataxic writing in a very chronic case of somewhat advanced locomotor ataxy. Indeed, the disease might almost be diagnosed from the writing, which shows in its structure defective co-ordination of the muscles of the hand. Bad as this writing is, its execution was only possible by the patient constantly watching the point of the pen. It is many years since this gentleman first felt difficulty in writing, though not before the locomotor ataxy had become marked. In his case, other delicate manipulations or co-ordinated actions first suffered ; thus he had to give up playing the piano, on which he was an accomplished performer, some time before writing became so difficult as it now is. We know that the difficulty here is due to muscular inco-ordination, the result of disease of the posterior columns of the spinal cord. But for the moment dismissing the word inco-ordination, and ignoring the central nature of the disease,

on watching this patient in the act of writing, it is seen that irregular contraction or flexion of one or other of the fingers is the more obvious cause of his difficulty in writing. The point of his forefinger tends to pass over the penholder in its efforts at contraction; and he states that one of his earlier difficulties was the spasmodic contraction of the third finger. I do not forget that this spasmodic contraction must necessarily be the result of inco-ordination. When he writes, as he often does, with a pencil, he complains of a feeling of fatigue along the extensor tendons of the first and second fingers, and the same feeling in the flexors of the hand. Sensation in the finger pulps is considerably blunted, but he distinctly feels the pen between his fingers, and finds that he can write best when he puts his pocket handkerchief below his wrist and hand. This assists him, no doubt, by the support it affords, and also in that a more diffused and equable sensory stimulus is conveyed to the centres than is the case when only a few points of the skin press on a hard surface, such as a table. Passing at present from the consideration of such points in this case as help to throw light on the pathology of writer's cramp, I would direct attention to the writing marked No. 13 in the plate, which is that of a patient who is suffering from general paralysis of the insane, and I give it because it represents a motor and, to a slight extent, a psychic fault. I purposely asked him to write down his name, as being the most familiar and easiest performed piece of writing which he could do. The motor or muscular weakness, so characteristic of this disease, is obvious in the tremulous and blurred writing, while the psychic difficulty I have referred to is seen in the unconscious misspelling of the surnames.

No 14 is another illustration of the same disease in a less educated man, where the affection is not so advanced, and where there has been a slight improvement under specific treatment. These cases are referred to chiefly for the sake of contrast.

If the writing marked 12, 13, and 14, be compared with that of the patients affected with writer's cramp, it is not difficult to see that they represent disease of a profound character and of central origin, as contrasted with what I regard as an essentially *functional affection, and largely the result of peripheral irritation.* There is no doubt that the greater number of competent authorities lean to quite a different view as to the pathology of writer's cramp, maintaining, as they do,

that it is the result of disease affecting the nervous centres, while, as to the exact part affected, there are considerable differences of opinion. On the supposition that every pur-posive act is produced through the action of a co-ordinating centre, it is supposed that this centre is at fault, or at all events that there is in some form or other disease affecting the spinal or cerebral centres.

It would not be within the scope of this paper to discuss the various theories of this kind which are to be found in system-atic treatises, and may be there consulted by those interested. I must, however, refer to the clearest, and, upon the whole, most satisfactory account of the nature of this disease which I have met with, and which is set forth by Dr. Poore, in the work already referred to. He appears, to some extent, to adopt and work out the opinions, more particularly, of Dr. Zuradelli, of Pavia, who holds that the disease is essentially due to "paralysis of one or more of the muscles used in writing, in consequence of which the antagonising muscles get the mastery and occasion a spurious cramp." "The paralyses present are not paralyses in the ordinary sense," but rather what might be termed "irritable weaknesses." The important statement is made that the affected muscles have diminished tonicity and electric irritability. Dr. Zuradelli analyses the act of writing, and Dr. Poore carries out this analysis more completely, the conclusion being "that writing is divisable into three acts—*the prehension of the pen, the poising of the hand and forearm, and the movement of the pen*, and there is probably no muscle between the shoulders and the fingers which is not brought frequently into action during writing."

He points out, further, that the muscles concerned in the prehension of the pen and poising of the hand are sub-ject to prolonged strain, "especially those concerned in prehension."

It is impossible here to enter more fully into Dr. Poore's view as to the cause of the affection, which may be summed up as an affection of the muscles induced by fatigue or pro-longed strain. He admits the existence of an emotional factor as contributing to the development of the disease, and this admission is necessary to account for the fact that special muscles or groups of muscles are often enough overworked by scriveners and others without necessarily inducing the disease.

While quite prepared to admit the existence of muscular irritability and the influence of over fatigue in its production, I do not think that this explanation is extensive enough.

Judging from the symptoms observed in the cases which I have detailed, Dr. Poore's view is not altogether satisfactory. There appears to me to be primarily sensory disturbance, generally, but not necessarily, peripheral, giving rise to reflex contraction of one or more muscles. Were one to assume the existence of a muscular sense the disease might be ascribed as due to a disturbance of that sense. In the case of J. P., he had little or no difficulty in pen prehension so long as he did not, as in the act of writing, require regulated and nicely adjusted muscular contractions. It would appear as if the spasmodic or excessive muscular contraction of the interossei in this case were similar to that spasmodic contraction of the internal rectus of the eye which occurs in high degrees of hypermetropia. In this case we have a sensory difficulty in the defective vision, which undoubtedly gives rise to reflex motor stimulus of the ciliary muscle in order to correct the hypermetropia. The ciliary and internal rectus muscles are both supplied by the third nerve, and this motor force often exerting its influence to the utmost on the ciliary muscle without producing perfect accommodation, passes naturally by the line of least resistance to the already strongly acting internal rectus, and so gives rise to its spasmodic contraction. Here a muscular co-ordination, highly organised and perfect, can be disturbed by what is essentially defective sensory stimulation. It is certainly not necessary to suppose in this instance the existence of special muscular irritability affecting the internal rectus, nor of impaired nutrition or disease of nervous centres. In so hardly acquired and so slightly organised or artificial a purposive act as that of writing, a very slight defect in cutaneous or musculo-cutaneous sensibility would involve disturbed reflex action. So we find in the patient affected with locomotor ataxy, that a slight defect in cutaneous sensibility, scarcely appreciable at first to ordinary tests, leads to inharmonious, and consequently more or less spasmodic reflex actions of muscles, in writing and other co-ordinated actions. In the patient A. C., the muscles affected are those supplied by the median nerve, and there is perhaps evidence of some special weakness of that nerve in the numbness which he has felt for the past year or so, along the course of its distribution, when the arm is pressed upon in sleep. In this case the disease is of an aggravated character, as it might very well be, considering its duration. Though it was brought on by writing, yet writing was not carried to excess, so as to induce muscular irritability; and

the muscular development of the hand and arm is exception-
ally good. That the disease here may be in the nervous
centres, and of the nature of impaired nutrition of motor
cells, is probable. Indeed, it would be inconsistent with
what we know of the physiology of the nervous system to
suppose otherwise than that there must be central changes.
My contention is, however, that the affection is peripheral
in origin, and of the nature of irritation of the terminal
fibres of sensory nerves, secondary and central changes
being inevitable in the course of time. The over-action of
the flexors in this man is clearly not the result of weakness
of the antagonising muscles. The influence of treatment in
the case of J. P. is also of some significance. The interossei
of the first and second finger being at fault, galvanization
of the nerves supplying those muscles gives relief at once,
and ultimately effects what may be regarded as a cure,
while rest for a prolonged period of the muscles at fault
was not followed by any benefit. Does this not in itself
indicate nerve disturbance rather than muscular exhaus-
tion as the fundamental weakness? In the second case
referred to, as already indicated, there never was any sense of
fatigue preceding the development of the affection, and there
is here also a point of possible significance in the slight
affection of the skin of the left hand and fingers supplied by
the radial nerve. Of course, were the right hand so affected,
it would be a fact of some importance. As it is, it only
suggests the existence of a possible slight defect in the
innervation of the right hand.

To the view here advanced it may be objected that, in the
cases I have cited there is no evidence of such sensory irrita-
tion caused by writing as would involve reflex spasm of a
muscle or muscles. Were we dealing with normal conditions
this would be a serious objection. The emotional factor which
Dr. Poore requires to call into his assistance in order to explain
all the facts, such as the spread of the disease to the left hand,
&c., is an important element in a consideration of the pathology
of the disease. Undue pressure of the fingers, as in a faulty
mode of pen prehension, or as the result of fatigue following
on overwork, might readily produce irregular reflex action in
an emotional nature, or in what might be supposed to be an
unstable or irritable condition of the central nervous system.
There is no fact more familiar than that the most automatic of
acts can be readily disturbed by emotional conditions.

In conclusion, it may be worth referring to the exalted reflex

irritability of muscles which occurs in the hypnotic state. There is here a suggestive illustration of how slight sensory stimulation may be followed by reflex contraction of muscles, almost tetanic in character, a condition which appears to be brought about by the cortical centres having their functions more or less in abeyance   Thus Prof. Heidenhain, of Breslau,[*] shows experimentally how gentle stroking of the skin over muscles induces contraction of those muscles, and how increase of the irritation causes this contraction to spread to neighbouring muscles.   " Thus, when I gently stroke the ball of the thumb, only the flexors and adductors of this member are set in activity.   If I stroke somewhat harder, the forearm muscles, especially the fingers contract.   .   .   .   Through further increase of the irritation, the latter too, and the shoulder muscles are thrown into spasm, so that the whole limb appears immovably fixed ; " &c.   Page 23.

At page 22 occurs the following statement :—" The unexpected part of the matter is the fact that this increase of reflex irritability in persons who have awakened from a deep hypnotic condition in spite of their return in all other respects to a completely normal condition, continues for a long time— days, and probably weeks !

" I gently stroke once or twice along Dr. Kröner's flexed right arm, which at once becomes stiff, since all the muscles are thrown into a condition of reflex spasm.

" Dr. Kröner has, however, not been hypnotized for several days."

I do not assert that this is, or was, the condition of any of the patients whose cases are referred to in this paper, but this artificial condition which may be induced in almost any one, points to the possible existence in some of a peculiar irritability of the reflex centres.

[*] *Animal Magnetism, Physiological Observations.*   By Rudolf Heidenhain, M.D., Prof. of Phys. in the University of Breslau.

The lithographic illustration which accompanies the paper is fully explained in the text.

THE DIFFERENTIAL DIAGNOSIS OF A CASE OF EPILEPTIFORM CONVULSIONS.

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GENTLEMEN,—Having decided that the convulsions are general
(*i.e.*, bilateral) and epileptiform in character, we have now to
determine :—

I. If the attack is genuine.

II. If genuine, what is its cause.

The Differential Diagnosis of Genuine and Sham Epilepsy.

Impostors frequently feign epileptic fits in order to get
admission to hospital, to obtain alms, or to give a confederate
a convenient opportunity of abstracting the purses and watches
of the sympathising crowd that gathers round them.

If the impostor is a clever artist, and well coached, the
detection of the deceit is often very difficult; indeed, the
detection of feigned or simulated disease is always difficult,
and requires both acumen and a profound knowledge of the
true affection.

The points of differential diagnosis are the following :—

Sham epilepsy is to be *suspected* when—

1. The fit occurs in a suitable place, and at a convenient
time to collect a crowd of sympathising observers. In hospital
practice a favourite time is the hour of visit of the physician
or house surgeon. The occurrence of fits at such, and at such
times only, is very suggestive of the feigned affection.

2. The patient receives no injury during the attack. Im-
postors do not hurt themselves as they fall; do not bite their
tongues; do not soil their clothes by evacuating the contents
of the bladder or rectum.[*]

If, in addition to these suspicious circumstances, any *positive*
facts, inconsistent with the genuine affection, are detected, a
positive diagnosis may then, *but then only*, be ventured upon.

[*] Genuine epileptics may not hurt themselves, and may not discharge
urine and fæces. These negative facts, therefore, are not conclusive.

Attention is to be directed to :—

1. *The condition of the reflexes, especially of the pupil reflex.*—In genuine epilepsy the reflexes are abolished. The pupil, at the commencement of the fit, is widely dilated and insensible to light.* During the stage of tonic convulsions, the pupil is still dilated, but alternate contractions and dilatations occur. Snuff thrown up the nostrils produces no result. In sham epilepsy the pupil responds to light, and dilates under any powerful and unexpected sensory impression, such as the prick of a pin. Snuff injected up the nostril produces violent sneezing, and usually cuts short the attack.

2. *The character of the spasms.*—Sham fits are often exaggerated. Impostors may fail to hit off exactly the character of true spasms. They sometimes err in making the spasms of equal intensity on the two sides of the body. The duration of the attack is often unduly prolonged : &c.

3. *The state of consciousness.*—It is often difficult to detect feigned unconsciousness, but the acute observer will sometimes perceive that the supposed patient takes occasional sly glances at his surroundings. Other circumstances, too, may suggest that he knows what is going on. Where the Faradaic brush is available, as in hospital practice, it is an efficacious means of determining whether consciousness is really lost, and of arresting a sham fit.

4. *The initial pallor* is not observed in sham epilepsy. This is not, however, a point of much practical value, for it is sometimes absent, and may easily escape attention in the genuine disease.

5. *The presence of marked cyanosis* during the attack is in favour of the genuine disease. The fact that the skin is cold and (towards the end of the attack) bathed in a clammy perspiration is of value. In sham epilepsy the skin is often moist, but it is warm.

6. *The escape of frothy saliva, unless it be bloody*, is of no value. Impostors know full well the marked impression produced on the lay mind when a patient lies convulsed and foaming at the mouth. They take care, therefore, to secrete a piece of soap in the cheek, and to manufacture a copious supply of frothy saliva during the attack. The escape of *bloody* saliva is in favour of the genuine disease, for, as I have already mentioned, impostors do not care to bite their tongues during the attack.

7. *The condition on recovery.*—In the majority of cases of genuine epilepsy the patient is stupid and bewildered after

* In exceptional cases the pupil is not dilated.

the attack.   Genuine epileptics, too, often feel ashamed of having been observed in a fit.   This is not, of course, the case in the feigned disease.

8. *The facial appearance of the patient.*—Confirmed epileptics often have a characteristic facial appearance which is difficult to describe.   The expression is dull and heavy.   Their intellectual powers are generally impaired.   When they are undergoing an active course of treatment, the face may be covered with the bromide rash.

9. *The effect of proposed energetic treatment.*—In sham cases, the proposed removal to the police station, the threatened application of the actual cautery, &c., are very efficacious means of arresting the attack, and of making a diagnosis.

Having decided that the spasms are genuine, we have next to ascertain their cause; for epileptiform convulsions may be due to a great number of different conditions, amongst which the following are the chief:—

1. Idiopathic (true or genuine) epilepsy.

2. A local "coarse" cerebral lesion; including under that term

       (*a*) Cerebral tumour.
       (*b*) Cerebral abscess.
       (*c*) Local meningitis of the convexity.

3. General meningitis.

4. Cerebral hæmorrhage (central and meningeal.)

5. Arrest of the blood supply to the brain, as a whole, or of the motor area in particular.

       (*a*) General bleeding.
       (*b*) Embolism or thrombosis.

6. Reflex irritation, as worms, teething, &c.

7. The presence of certain poisons in the blood and brain; some of the more important being:—

       (*a*) Retained urinary products.
       (*b*) Alcohol.
       (*c*) Lead.
       (*d*) Malarial poison.

8. The onset of the exanthemata and other febrile conditions in children.

The diagnosis of the cause of an attack of epileptiform convulsions must obviously, in many cases, be a difficult and tedious operation.

The following are the steps in the enquiry which I am in the habit of following out in practice:—

PRACTICAL STEP No. 1.

Ascertain from the patient's friends, or from himself, as soon as he becomes sufficiently conscious, whether he has had previous attacks, and for how long.

Positive information on this point enables us at once to divide cases of epileptiform convulsions into two great groups.

A. *Cases in which there have been repeated attacks of a similar character, which have not been attended with any serious disturbance of the general health.*

In such cases, the cause of the convulsions is, in all probability, the disease idiopathic or genuine epilepsy. Exceptions occasionally occur; in some cases of organic brain disease, especially syphilitic tumours pressing upon the motor area of the cortex, the grey matter gets into the habit of discharging, and may continue to discharge (*i.e.*, the patient may continue to take fits) for a long time after the original source of irritation (the syphilitic gumma) is removed. In such cases there may be no symptoms of coarse lesion, when the patient comes under observation; and, unless the history of the case, as to previous headache, vomiting, &c.; the age at which the fits commenced; and the exact character of the spasms, be carefully inquired into, the case may be thought to be one of the idiopathic or so-called genuine disease.*

B. *Cases in which there is no history of a previous attack* (either because this is the first fit, or because the patient cannot [from coma, stupidity, or other cause] give any information on the point) *or in which the fits have only commenced of late.*

The convulsions may in such cases be due to any of the causes mentioned above. (See page 182.)

In pursuing the inquiry the following circumstances must be taken into consideration :—

1. *The age of the patient.*—Some causes are undoubtedly more active at one period of life than at another. There are, however, so far as I am aware, no reliable statistics on the point.

In the following tables I have attempted to give my own impressions as to the relative frequency of the different causes at different ages, presuming in all cases that the first attack

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* In some cases of plumbism the convulsions continue for some time after the other indications of lead poisoning (such as the blue line, colic, &c.), have disappeared ; but in all the cases of this description, which have come under my notice, there has been anæmia, and some affection of the general health. In some cases too of alcoholic epilepsy, the convulsions continue after the other indications of alcohol have disappeared.

has occurred *at*, and not prior to, the age mentioned in the table.   I am well aware that impressions of this sort are very often fallacious; but it is with the view of obtaining the opinion of more experienced observers than myself that I have ventured to draw up such a list.

Table I.

Supposed order of frequency of the different forms of epileptiform convulsions in children up to 10 years of age.

1. Reflex irritation, including many cases of rickets.
2. Meningeal inflammation.
3. Cerebral exhaustion and anæmia from diarrhœa.
4. Onset of the exanthemata and other febrile affections.
5. Idiopathic, including many of the so-called cases of infantile eclampsia.
6. Uræmia.
7. Cerebral tumours.
8. Meningeal hæmorrhage.

Table II.

Supposed order of frequency of the different forms of epileptiform convulsions, the first fit appearing between ages of 10 and 20.

1. Idiopathic.
2. Tubercular and other forms of meningitis.
3. Cerebral tumours (especially scrofulous growths.)
4. Uræmia.
5. Reflex.
6. Cerebral softening, the result of embolism.
7. Lead.

Table III.

Supposed order of frequency of the different forms of epileptiform convulsions, the first fit appearing between the ages of 30 and 45.

1. Intracranial tumours and other coarse cerebral lesions.
2. Basilar and other forms of meningitis.
3. Uræmia.
4. Idiopathic epilepsy.
5. Softening from thrombosis and embolism.
6. Alcohol, lead, &c.
7. General hæmorrhage.
8. Reflex irritation.
9. Cerebral hæmorrhage.

TABLE IV.

Supposed order of frequency of the different forms of epileptiform convulsions, the first fit appearing after the age of 45.

1. Intracranial tumours and other coarse cerebral lesions.
2. Uræmia.
3. Thrombosis and embolism.
4. Alcohol, lead, &c.
5. Hæmorrhagic apoplexy.
6. Idiopathic epilepsy.
7. General hæmorrhage.
8. Reflex irritation.

2. *The character of the attack itself.*—The most important points being :—

(*a*) *The mode of commencement*, whether bilaterally or locally, the latter being very suggestive of a "coarse" cerebral lesion.

(*b*) *The state of consciousness*, whether lost at the commencement of the attack or not. In epileptiform convulsions due to a "coarse" cerebral lesion there is usually no loss of consciousness at the commencement; and, indeed, consciousness may be retained throughout the stage of bilateral spasms. In other bilateral epileptiform convulsions, consciousness is lost.*

(*c*) *The duration of the subsequent coma* may give some information. In cases of cerebral hæmorrhage, for example, the spasms (when they occur) are followed by prolonged and deep coma. In cases of uræmia and lead encephalopathy, the patient usually remains in a comatose or semi-comatose condition for a considerable time. In ordinary (genuine) epilepsy, consciousness is, as a rule, soon regained, though the patient may be stupid and confused after the attack.

(*d*) *The recurrence of the spasms.*—In uræmia, plumbism, and in some cases of cerebral tumour, there are repeated fits at short intervals. In some cases of genuine epilepsy, the same fact is observed.

3rd, *and chiefly, The examination of the patient after the spasms have passed off.*—In this examination, attention is to be directed to the following points :—

(1.) *The present condition of the patient.*

(*a*) The presence of any symptoms or physical signs indi-

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* This is the general rule ; exceptions occasionally, though rarely, c....sion. Thus, in some cases of convulsions due to cerebral softening, emb..... and thrombosis, there is no loss of consciousness.

cative of a lesion which might cause the convulsions, especially the condition of the optic discs, heart, arteries, and kidneys.

(*b*) The presence of any obvious exciting cause, such as teething, worms, &c.

(2.) *The previous history of the patient.*

(*a*) As to the occurrence of previous attacks of spasms; their number; frequency; the age of the patient at the time of the first fit; the supposed cause of the attack, &c., &c.

(*b*) As to other symptoms and diseases, especially such as would result from nervous disease.

(*c*) As to his habits, surroundings, and mode of life.

(3.) *The family history* and hereditary tendencies, especially any tendency to nervous disorders.

(4.) *The progress of the case and the effects of treatment.*

In practice, I find the best method of following up the enquiry is :—

PRACTICAL STEP No. 2.

Ascertain if there are any positive objective symptoms or physical signs of any of the causes of epileptiform convulsions mentioned on page 182.

In this way *Group B* is subdivided into two minor groups.

C.—*Cases of epileptiform convulsions due to lesions which are indicated by positive objective symptoms and physical signs.*

D.—*Cases of epileptiform convulsions in which the cause of the convulsions is not indicated by objective symptoms and physical signs.*

CLASS C.—Positive evidence in the form of objective symptoms and physical signs is generally present in the case of epileptiform convulsions, which result from :—

1. " Coarse " cerebral lesions, including under that term, tumour; abscess; and meningitis, limited to the convexity.
2. Basilar meningitis.
3. Cerebral hæmorrhage.
4. Embolism and thrombosis.
5. Lead.
6. Uræmia.
7. General hæmorrhage.

I shall therefore, in the next place, proceed to discuss the chief facts (negative and positive) in favour of each of these ⸱tions.

⸱leptiform convulsions resulting from a local " coarse "

cerebral lesion (including under that term tumours, chronic abscess, meningitis of the convexity).

A local coarse cerebral lesion is a frequent cause of epileptiform convulsions. The spasms are often limited in distribution. In the case, we are at present considering, (*general* epileptiform spasms due to a coarse lesion), the spasms usually commence locally, extend in a definite order, and finally become bilateral. Consciousness is retained in the earlier stages, and sometimes throughout the attack. There is often subsequent temporary (epileptiform) paralysis. The spasms tend to recur. In some cases the condition termed " epilepticism " is observed.

The *positive* facts in favour of a local coarse cerebral lesion are :—

1. *Headache;* generally severe; often paroxysmal and intermittent; sometimes localised to one particular part of the head; and in such cases frequently attended with local tenderness on skull percussion.

2. *Vomiting* of a purposeless character; usually unattended by any feeling of nausea; generally accompanied by constipation; apt to occur on any sudden movement or alteration in the position of the patient (disturbance of the cerebral circulation). Cerebral vomiting often, therefore, occurs when the patient first rises from bed in the morning. It is often accompanied by marked vertigo. In cerebral vomiting the tongue may be quite clean, though it is not unfrequently furred.

3. *Double optic neuritis and optic atrophy.*—These conditions are present in the great majority of cases of cerebral tumour, irrespective of their seat; in some cases of chronic abscess; but not, as a rule, in cases of meningitis, limited to the convexity.

4. *The presence of associated lesions.*—The presence of external tumours (cancerous, sarcomatous, &c.); of enlarged glands; of associated diseased conditions, such as occur in connection with special forms of intracranial growths (syphilitic disease of the bones, throat, &c.; scrofulous disease of glands, joints, lungs) in a supposed case of intracranial tumour. The presence of ear disease in a supposed case of cerebral abscess. The presence of lung disease in a supposed case of limited meningitis, &c., &c.

In addition to these symptoms, which may be present in local " coarse " cerebral lesions irrespective of their seat, there may be—

5. Special symptoms due to the special position of the lesion. (Localising symptoms.) Amongst which I may mention:

(*a*) Local spasms, which are usually of much more frequent occurrence than the general epileptiform convulsions in which they terminate; and with which we are at present concerned.

(*b*) Affections of individual *cranial nerves.* Local paralyses; local alterations in the sensibility of the face; disturbances of the special senses.

(*c*) Symptoms which result from lesions of special parts of the encephalon.   Such as alternate hemiplegia in tumours of the pons varolii, &c., &c.—

6. *A previous history of*—

(*a*) Symptoms of cerebral tumour.

(*b*) A head injury *—(a frequent exciting cause of intra-cranial growths)—a chronic ear discharge, &c.

7. *A family history* of cancer, scrofula, &c., may be of some corroborative value.

The negative facts in favour of a local "coarse" cerebral lesion are:

1. The absence of cardiac and arterial disease,—the great causes of embolism, thrombosis, and of cerebral hæmorrhage.

2. The absence of the symptoms and signs of kidney disease—the cause of uræmia.

3. The absence of any indications of lead impregnation; in which condition symptoms and signs identical with those of a "coarse" cerebral lesion occur.

4. The absence of marked pyrexia and delirium; conditions which are usually associated with diffuse (not local) meningitis or cerebritis.†

Having decided in favour of a local "coarse" cerebral lesion we have next to determine whether it is a tumour, chronic abscess, or limited meningitis.

The differential diagnosis of intracranial tumour and chronic cerebral abscess.

A cerebral abscess—so long as it remains chronic (*i. e.,* does not give rise to meningitis or cerebritis) may be regarded simply as an intracranial tumour.

In some cases there are no symptoms (it is entirely latent). Any diagnosis is then of course out of the question.   In other cases the symptoms resemble more or less closely those of

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* Genuine epilepsy sometimes follows a head injury.   This and the other facts mentioned above are of course not absolute.   In estimating their importance all the facts of the case must be taken into consideration, and due allowance be made to the relative value of each.

† The abscess of pyrexia and delirium is chiefly valuable as a negative diagnostic of intracranial tumours.   In the case of abscess of the brain intercurrent attacks, characterised by these symptoms, not unfrequently occur.

solid intracranial growths. The points of distinction to which attention is to be directed are—

1. *The presence of bone disease* (running from the ear, &c.) the great cause of cerebral abscess.

2. *The exact characters of the symptoms.* In cerebral abscess the symptoms are often very stationary and chronic. There is less frequently optic neuritis. Local paralyses and spasms do not so frequently occur.

Acute exacerbations, characterised by violent symptoms, headache, vomiting, delirium, mania, convulsions, high temperature, &c.; and depending upon meningitis or cerebritis, may occur, and cause a rapid and fatal termination.

(The occurrence of an acute attack of this discription, especially in an adult, should suggest the presence of purulent meningitis. In all such cases a careful local examination, more especially of the ear; and a rigid inquiry into the history and symptoms is necessitated. Such cases often pass unrecognised, and are returned as deaths from acute mania, typhoid, &c.)

The differential diagnosis of cerebral tumour and a limited meningitis of the convexity is often very difficult. (In some cases it may be impossible owing to the fact that the two conditions are combined, as in some scrofulous cases.) Both conditions may give rise to headache, vomiting, and limited or general epileptiform convulsions.

The points to which attention is to be directed in making the distinction are—

1. *The temperature.* There is generally some pyrexia in cases of meningitis. The temperature is not increased, and in some cases is subnormal, in uncomplicated cases of cerebral tumour.*

2. *The condition of the optic discs.*—As I have already more than once remarked, there is double optic neuritis or optic atrophy in the great majority of cases of intra-cranial tumour. In the great majority of cases of meningitis, so long as the lesion is limited to the convexity, optic neuritis is not observed.

3. *The associated pathological symptoms.*—Limited meningitis (when not traumatic, including under that term meningitis due to external injury, extension of ear disease, &c.) is nearly always tubercular. The presence, therefore, of associated disease in the lungs, peritoneum, or glands, is of some value, as corroborative evidence. Or rather, the absence of

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* It is quite exceptional to find a normal temperature of continued duration, in cases of meningitis. Such cases do however occasionally occur.

such associated pathological conditions is against limited meningitis.*

4. *The presence of paralyses of individual cranial nerves.*— In cases of intracranial tumour affections of individual cranial nerves, such as result from pressure on the nerve trunk, are common. In cases of meningitis, limited to the convexity (the condition which we are at present considering), local paralyses of cranial nerves do not occur.

5. *The course of the case.*—The course of local meningitis of tubercular origin is usually much more rapid than that of intracranial tumour. Characteristic symptoms of meningitis—viz., pyrexia, delirium, coma, &c.—soon appear and place the diagnosis beyond doubt.

6. *The general state of nutrition.*—In cases of tubercular meningitis, emaciation is a more prominent symptom ; indeed, in many cases of cerebral tumour the general nutrition is well preserved.

7. *The effects of treatment.*—Temporary improvement often occurs in the case of intracranial tumours. In syphilitic cases the improvement is not unfrequently permanent, and directly attributable to this treatment. In tubercular meningitis the case usually goes on from bad to worse, in spite of all treatment.

8. *The previous history.*—In cases of cerebral tumour there may be, and often is, a history of long continued headache, attacks of vomiting, convulsions, paralyses, &c. In cases of meningitis the paralysis (hemiplegia or monoplegia), when present, is of recent date.

(*To be Continued.*)

CASE OF HÆMATOMA OF THE PERICRANIUM IN A CHILD SIMULATING HYDROCEPHALUS AND ASSOCIATED WITH CONSTITUTIONAL SYPHILIS.

By JAMES FINLAYSON, M.D.,

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A boy, 8 years of age, was admitted to the Western Infirmary on 9th October, 1879. His head was enormously enlarged,

* The positive evidence is not of so much value ; for a scrofulous tumour may be associated with the same lesions as a tubercular meningitis.

and presented at first sight a pretty close resemblance to the extremer forms of hydrocephalus. Indeed, several senior students on examining the case made this diagnosis. The story, however, was, that the swelling was only of three months' duration, that a soft limited swelling had appeared then at the vertex, and that the great increase in the present generalised swelling had only begun six weeks before admission, and had gradually attained its present dimensions. On examining the head with the hand, the idea of hydrocephalus was at once shaken, for the whole surface gave the sensation of fluid without any resistant bone at all, and it was evident that the fluid existed between the bone and the scalp; indeed, the tension was so great that the finger could just be dipped down to touch the skull, so that the sutures could not be fully examined, but the fontanelles were apparently closed; and the application of this pressure did not give rise to any nervous symptoms. The diagnosis lay between an abscess under the scalp or an accumulation of some other fluid in the same region; the possibility of a connection with fluid within the skull, through some aperture in the bones, could not be altogether put out of the question, as the whole surface of the skull could not be explored, and the history could not be implicitly relied on.

There was no account of any injury to the head, but some obscure report of such an occurrence reached us through the neighbours of the family, and as the mother was rather "queer," and unfit to manage her house properly, some injury may have occurred, but probably this was of a slight kind.

During the summer his health had not been so good, and he appears to have had two convulsion fits, probably about the time the first swelling of the head was noticed. These fits were said to have been unaccompanied by loss of consciousness, but five days before admission a recurrence of convulsions, with insensibility and some delirium, lasted with intermissions for twelve hours.

In his infancy there were eruptions or sores in various parts of his body, and on admission several sores were found on the right foot, leg, and thigh. The sore over the trochanter might be due to pressure, but the others seemed more likely syphilitic from their appearance; no history of syphilis in the parents could be ascertained; the child had had sores on his toes for eight months, and his milk teeth had all fallen out within a year of their appearance, but no more definite evidence of syphilis could be made out in himself or his family.

The exact nature of the fluid being unknown, it was thought

proper to use the aspirator, and to employ a very fine needle in the first instance. This was done by Dr. Patterson on 10th October, and the carbolic spray was also used in case free incision might be required if the fluid proved to be purulent, but it was at once seen that the aspirator contained thin bloody serum; nine ounces of this came away when the needle became blocked; it was thought prudent to rest satisfied with this quantity in the meantime, and, especially, to wait to see if the removal would cause any nervous symptoms in the child. The removal of this quantity of thin blood only took away the feeling of tension of the scalp, the great accumulation still remaining, but the finger could now definitely ascertain that the fontanelles were closed, and the sutures also, although the edges of the bones at these situations seemed thickened and rough. The fluid seemed to consist of bloody serum, and after standing a slight loose clot was formed. It should be stated that on admission some streaky discolorations were noticed on the face, below the level of the nasal bones; these were said to have appeared only a few days before admission, but in the cachectic state of the child, with ulcerations, sores, &c., these were attributed to the general condition, and their bearing on the diagnosis of the bloody effusion was only recognised after the use of the aspirator.

The removal of the fluid caused no immediate disturbance of any kind, and the child seemed to bear it perfectly well; but in two or three hours he became very lethargic, and was supposed by the attendants to have some slight facial twitchings. He recovered, however, in great measure from this state, but in the evening frequently recurring convulsions set in, and these lasted for some hours, but under the use of chloroform inhalations at first, and subsequently of bromide of potassium by the mouth, they subsided in the course of the night.

During the night after the tapping, there were several loose motions from the bowels; and the history, on admission, bore that he had been frequently troubled with diarrhœa at intervals during the last few months, and that there had been an attack of this kind during the week before admission.

On the following day there was a good deal of screaming, and the child was apparently in an unconscious state, but the tension of the scalp had not increased from the time of the aspiration. Diarrhœa continued troublesome, and was treated by vegetable astringents.

On the third day after the tapping (October 13), the child was found considerably better; the screaming and moaning had greatly abated or disappeared, and he seemed more lively

and disposed to eat and drink; the diarrhœa also had nearly ceased. The fluid under the scalp had entirely disappeared since the previous day; only a few movable lumps, apparently clots, could be felt. The face appeared a little swollen for the first time, but no albumen was found in the urine.

In a couple of days (October 15) he is reported as somewhat better on the whole, although frequently uttering a querulous cry, and also repeating words again and again, such as "Come here, come here," &c. He also showed a disposition to clutch at objects near him, and would scarcely answer any questions further than "Yes" or "No." Unfortunately, however, a bed sore had formed over the sacrum, and the urine was now slightly albuminous. A water cushion was supplied, and he was likewise ordered port wine. He was taking his food fairly well.

On the 18th October a slight discoloration of the right leg was noticed, and this soon became worse, so that on the 20th the whole leg was found much swollen, and of a dusky red colour. On the inner side of the thigh a large black, almost gangrenous, patch was seen, and this presented two large blisters with dark coloured serum. After the redness on the leg appeared, the child became gradually worse, obviously weaker, and also more stupid, and even at times unconscious. He died on 21st October. The temperature after admission was frequently elevated, reaching even 103° F., but presented no very definite or typical course.

Post-mortem examination by Dr. Joseph Coats.—The right leg is somewhat swelled and red on the surface with desquamation. The swelling occupies both thigh and leg. There are also ulcers on right leg, and an onychia: also cicatrices on left leg.

Head.—On cutting through the scalp an accumulation of altered blood clot is found, chiefly situated immediately outside the pericranium, but also partly in its substance. This clot is brownish and soft for the most part, and emits a rather putrid odour; (the examination, however, had been unavoidably postponed for several days). The pericranium is very brittle, and in removing it there is frequently a tearing of it, but so far as could be determined there is no blood between the pericranium and the bone. The membranes of the brain are normal. The ventricles are somewhat distended with serous fluid, and the fornix rather softened.

Chest.—The heart is rather large, weighing 9 oz. The lungs are both somewhat adherent, and contain frequent condensations of a dark grey colour.

Abdomen.—There is an excess of fluid in the peritoneal cavity. In some parts there is a thin veil of fibrine over the surface, but no general exudation. The upper surface of the liver is adherent to the diaphragm, and here there is a considerable exudation with some yellow masses, chiefly in the diaphragm. Corresponding to these there are also little nodules on the pleural surface of the diaphragm.

The liver weighs 31½ oz. It is fatty, and in the substance of it there are numerous small yellow tumours, probably syphilitic.

In the spleen there is a cheesy infarction of considerable size; the organ weighs 3½ oz.

The kidneys are normal in appearance, and weigh 3 and 2½ oz.

In the small intestine there are three ulcers with undermined edges, but not of large size.

The right femoral vein is greatly distended and occluded by a thrombus, which can be traced down into most of the veins of the thigh. The swelling of the thigh and leg depends on a serous exudation into the skin and muscular connective tissue.

ON DRAINAGE OF THE BLADDER AFTER LITHOTOMY, WITH PARTICULAR REFERENCE TO SUPRAPUBIC LITHOTOMY. *

By PROFESSOR F. TRENDELENBURG, Rostock.

Translated by WM. G. DUN, M.D.

Some years ago, I published † a case of suprapubic lithotomy, in which the after treatment was carried out in a peculiar manner. The patient was caused to lie on the abdomen, a T shaped drainage tube was inserted into the bladder, and the wound left open. The shape which I gave the drainage tube, in order to prevent it falling out, has been employed by Schede and Veit in the drainage of the uterus. The drainage of the bladder in the prone posture, after the high operation, has

only been practised, so far as I know, by Lesehik,* who was quite satisfied with this method. Having convinced myself, by other two operations, that my plan of after treatment leaves nothing to be desired, I may perhaps be permitted briefly to refer again to the subject.

In the endeavour to include suprapubic lithotomy in the list of operations suitable for strict antiseptic treatment, it has been attempted, in recent times, to perfect the operation in quite the opposite manner. Stitching of the vesical wound, as formerly recommended by Bruns, and without which the Listerian dressing is devoid of meaning, has been combined with the antiseptic closure of the external wound. If, however, we glance over the more recent contributions to this subject, we are soon convinced that this expedient does not quite perform what it seemed to promise. Scarcely one case is found in which the urine did not, after a short time, either partially or completely flow through the wound. Stitching of the bladder has accordingly proved an insecure method of closure, and scarcely anything else was to be expected. If the calculus be at all large, so that the vesical wound extends deeply behind the symphysis, bruising of the edges of the wound during extraction can scarcely be avoided; or should it be necessary to make lateral incisions in order to enlarge the opening, then very considerable technical difficulties must stand in the way of obtaining a perfectly water tight closure of the wound by sutures, and especially so in children in whom the wall of the bladder is extremely thin. But should we even succeed in obtaining a perfect means of so closing the vesical wound in every case, that the requirements necessary for union by primary intention were rendered certain, I would not willingly forego free drainage of the bladder in the more difficult cases. It is the most certain protection not only against infiltration of urine in the neighbourhood of the bladder, but also against suppurative pyelonephritis, which is so apt to ensue both upon lithotomy and lithotrity, especially the latter.

In most patients with old and somewhat large calculi, and also in the case of patients who have suffered from disease of the prostate or from stricture, the ureters and pelves of the kidneys are found, on *post-mortem* examination, to be dilated. The dilatation affects the lowest section of the ureters proportionally least; but it is, nevertheless, distinctly marked, and not infrequently is so considerable, that in preparations preserved in spirit, a lead pencil may be easily passed from the bladder

* *Berl. Klin. Wochenschrift*, 1878. No. 9.

into the ureters. If the orifice be much dilated, the valvular closure of the ureters towards the bladder cannot fail to be insufficient. Bladder and ureters form now one continuous cavity, are alike filled with urine, and on increased pressure in the bladder, some of the urine it contains will regurgitate into the ureters. Any decomposition of the urine in the bladder will readily, therefore, be communicated to the urine in the ureters; and any operation on the bladder will, in respect of the danger of septic pyelonephritis, have the same importance as if it had been performed on the ureters or the pelves of the kidneys themselves.

This explains the fact that, in patients with old standing diseases of the bladder which produce great dilatation of the ureters, relatively unimportant surgical operations, in or on the bladder, frequently induce in quite an unexpected manner severe renal symptoms, and not unfrequently terminate fatally by acute septic pyelonephritis. Those operations are especially to be feared after which the urine does not flow freely from the opened bladder, but remains in it, mixed with blood and secretions from the wound, and those patients are particularly endangered who, before operation, have suffered from slight cystitis, with alkaline decomposition of the urine. If putrescence of the urine take place after operation, it will depend upon the sufficiency or insufficiency of the closure of the ureters whether decomposition continues restricted to the urine in the bladder, or extends to the urine in the ureters and pelves of the kidneys; whether there is merely a severe, perhaps even diphtheritic, inflammation of the bladder, or superadded septic pyelonephritis. The conditions after lithotrity are the most unfavourable, and hence it is an old practical rule not to undertake lithotrity in cases of large calculi (which are also usually old), and where changes in the kidneys are present. The age of the patient is of less importance than the duration of the symptoms of calculus. I lost a patient, aged 24, from putrid pyelitis of the right side, perinephritic abscess, and peritonitis, on whom I had performed lithotrity but once. The stone had existed from early childhood, and was too large and hard for lithotrity; the patient had refused lithotomy, which I had in view. A recent cystitis with fever was present, but the operation was not performed till the patient had been some days free from fever. At the autopsy, considerable dilatation of the ureters and pelves of the kidneys was found, especially on the right side.

Unfortunately, at the *post-mortem* examination, I had not

then thought of the insufficiency of the closure of the ureters; so far as I know, attention has not yet generally been directed to this point, and it would be interesting to hear more particularly regarding it from pathological anatomists. The possibility that the active organisms described by Traube and Klebs may, by their own strength, penetrate, against the stream, the intact valves (*Schleusen*) between the bladder and the ureters, is certainly *a priori* not to be denied; * in our cases, however, the presumption is strong that the bacteria find the valves open, and pass freely through with a regurgitating wave.

Thorough washing out of the bladder with antiseptics, both before and after the operation, diminishes very much, of course, the danger, and Hueter,† rightly, indeed, lays great weight upon this procedure. I am doubtful, however, if this will always suffice with a fluid so very decomposable as that consisting of urine, blood, and secretions from a wound, and where there are so many nooks and crannies in which the decomposing agent may lodge, as, for instance, in an old hyper-trophied bladder with trabeculæ. If we have, as after lithotomy, a wound, by which we can effect the free discharge of the whole decomposable fluid, then we dare not reject without danger the great advantage which lies in the possibility of keeping the bladder and ureters empty.

If every drop of urine which comes from the ureters flows immediately through the drainage tube, then the urine has plainly no time to putrefy in the bladder; even if it were muddy and ammoniacal before the operation, it now trickles away quite clear and odourless, and decomposes much more slowly in the vessel in which it is collected than it would in the bladder, where it is placed under the same conditions as a decomposable experimental fluid in a breeding oven.

For these reasons I introduce into the bladder, through the wound, the T shaped drainage tube, not only after suprapubic lithotomy, but also after lateral lithotomy, and in complicated cases also after the median operation. At the completion of the operation I wash out thoroughly the wound and the bladder with carbolic solution, and then, relying on the efficacy of the drainage, discontinue all further injections and other antiseptic measures, which, at least for the perineal incisions, owing to the proximity of the anus, can only be very uncertain. Free discharge is here the best antiseptic.

* Compare Kleb's *Handbuch der Path. Anat.*, I, p. 655.
† *Deutsche Zeitschr. f. Chir.* viii, p. 221.

Seven lithotomies now performed by me have all been successful. One was a lateral lithotomy in a gentleman aged 65, with great hypertrophy of the prostate. During the extraction of the uric acid calculus, which had previously been crushed, the anterior wall of the rectum was probably rather much bruised; on the fifth day a perforation of the wound into the rectum took place, and an extremely fine urethro-rectal fistula remained after recovery. The drainage tube was removed on the sixth day, the highest temperature was 38·2° C. [100·8° F.]

In two cases, one a lawyer aged 30 the other a railway official aged 54, the median operation was performed. The first case was relatively simple; in the second the stone was phosphatic, and almost as large as a hen's egg; there was an old urethral stricture which was divided by the wound, the urine was highly ammoniacal, and the patient was much reduced by long suffering. Here the drainage acted admirably, the previously excessively stinking urine was quite odourless, as long as the discharge was free; sometimes the drainage tube became blocked by particles of the calculus, and required to be cleared; on the seventh day it was removed; highest temperature 38·2° C. [100·8° F.]

In the case of an undeveloped girl of 14 years, I preferred the vaginal incision to lithotrity, as on grasping the stone it seemed evident that it was not freely movable, but was firmly attached to the posterior wall of the bladder. I did not perform the suprapubic operation, because from the existing incontinence, and the firm contraction of the bladder during anæsthesia, it could not be properly filled with fluid. In order more conveniently to get access to the narrow vagina, the perinæum was divided close down to the anus. The bladder was then opened through the anterior vaginal wall by a perpendicular incision, and the index finger introduced through the wound. In the bladder a large soft phosphatic calculus was found, the nucleus of which consisted of a half straightened hair pin, both ends of which were pressed into the bladder wall. After the extraction the vaginal and perineal wounds were closed by sutures. The vaginal incision extended downwards to the upper part of the urethra, and on recovery a urethro-vaginal fistula remained at the lower angle of the wound, through which, on urination, part of the urine passed in a stream directed obliquely backward. The incontinence existing before the operation gradually ceased. In a similar case, in future, I would prefer the high operation, even if I did not succeed in filling the bladder with water.

I have performed the suprapubic operation three times. The two cases to be added to the one previously reported are the following :—

(1.) Otto R., aged 2 years 11 months, suffered for about a year from difficult micturition. On examination, during anæsthesia, a very large stone, for his age, was found, occupying, to a large extent, the cavity of the pelvis. The suprapubic operation was performed on 4th October, 1877. As some difficulty was experienced in getting the calculus through the incision in the bladder, the wound was dilated on both sides, and the stone extracted by means of forceps. Pretty considerable hæmorrhage took place from the mucous membrane of the bladder, to which the rough stone was firmly adherent on all sides. The bladder was carefully washed out with a 1 per cent solution of carbolic acid, the ⊤ shaped drainage tube inserted, and the upper end of the wound in the skin brought together by sutures. The recti muscles were also approximated by means of a stitch, in order to keep back the peritoneum, which, from the abdominal contractions, was being forced into the wound. The child was laid upon his belly on two air cushions. The urine and blood were collected in a small porcelain vessel. At first the child had to be held, but after some hours he became quiet, and lay still of himself on his belly. During the next few days there was obstinate constipation, and, on the fifth day, after the administration of purgatives, violent diarrhœa, with feverish symptoms, set in, and continued with varying intensity during the whole time of the after treatment, the fever being irregularly intermittent. The healing of the wound went on without disturbance, granulated normally, and, on the twelfth day, the drainage tube was removed. It was incrusted with greyish crystalline masses, which were found, on microscopic examination, to consist of crystals of cystine. The calculus, which was examined chemically by Professor Jacobsen, consists entirely of cystine ; it weighs 26 grm., is flat, eggshaped, and measures in its various axes 4·3 and 2·5 cmr. [1¾ in. and 1 in.] Abundant crystals of cystine were also found in the urine discharged. On the twenty-second day, urine began to pass by the urethra, and a few days later the fistula closed. The boy was dismissed four weeks after the operation. So far as can be learned, cystinuria exists neither in the parents nor in the other members of the family. The urine of the child, which was at intervals examined for some time, always contained great abundance of crystals of cystine.

(2.) Heinrich H., apprentice shoemaker, a slenderly built,

anæmic loooking, almost boyish, young man of 17 years, had suffered, as long as he remembers, from frequent micturition, hæmaturia, and pain in the bladder on running or driving. He was catheterised, after which some solid particles were passed, which proved to be pieces of the outer shell of a hard stone about the size of a nut. There was slight cystitis, with moderate fever. The filtered urine contained albumen. On 1st June, 1880, the rectum was distended as much as possible with sponges, and after washing out and filling the bladder with carbolic solution, the suprapubic operation was performed. No difficulty was experienced in the operation, the hæmorrhage from the vesical wound was, as usual, not inconsiderable; one small artery of the anterior wall of the bladder was ligatured. The upper angle of the external wound was closed by a few sutures, in order to protect the peritoneum; the drainage tube was introduced, and the patient laid on his belly on two water cushions filled with air. The position was well borne by the patient, who only complained of pain in the breast. Under completely open treatment the healing of the wound went on quite undisturbed. The urine which dropped into the porcelain dish was pretty clear, odourless, and of acid reaction. On the seventh day the drainage tube was removed, and the abdominal posture discontinued. On the tenth day the urine was passed, in great part, by the urethra; from the sixteenth day onwards it was passed entirely by the urethra, and four weeks after the operation the patient was dismissed with a cicatrised wound. The urine still contained some albumen, and was slightly turbid. Probably this had some connection with the fact that the moderate fever, evening 38·2° to 39° C. [100·8° to 102·2° F.], which was present even before the operation, continued three weeks after it. During the last week the patient was free from fever. The stone is phosphatic, with a nucleus of uric acid.

From what I have experienced in these operations I cannot share the unfavourable opinion which is still pronounced by many upon suprapubic lithotomy.* That infiltration of urine should occur with drainage of the bladder and the employment of the abdominal decubitus, I consider impossible, and as to the supposed difficulty at the operation of hitting upon the space free from peritoneum, I can only affirm that, in my operative courses, in which the suprapubic operation is performed on every subject, I have only seen injury of the peritoneum happen in the hands of a very unskilful operator. In my courses during the last two years,

* Compare Mass in *König's Lehrbuch d. Chir.*, 2 Aufl. II, p. 379.

I, as well as Petersen,* have distended the rectum by means of a colpeurynter, after the method of Braune and Garson,† so as to push the bladder upwards. The safety of the operation is thereby very much increased, as the prevesical fold of peritoneum rises with the bladder, and is carried upwards from the symphysis. According to the measurements of Garson, with which the more numerous measurements of Petersen pretty well agree, the distance between the peritoneal fold and the upper border of the symphysis may, under particularly favourable conditions, amount to 70 mm. (2¾ in.) The results vary very much in different subjects, and caution is therefore demanded in the operation in spite of this expedient. The internal orifice of the urethra is also carried upwards behind the symphysis, and if two of Langenbeck's resection hooks are placed at the sides of the wound in the bladder, and a third one above, the whole interior of the bladder may, with a good light, be easily inspected. In one of Garson's cases the internal orifice approached to within 15 mm. of the conjugate diameter of the pelvis. In children, one or two sponges are best suited for distending the rectum ; or, when the calculus is large, an assistant may, according to the old method, with a finger in the rectum press the stone upwards and forwards towards the anterior abdominal wall, by which means essentially the same result is attained. Under these conditions, even with the bladder empty, we may, in children, provided the stone is large enough, cut down upon it close over the symphysis, without injuring the peritoneum.

Supplement.—Since this paper was written, I have had another case of suprapubic lithotomy.

Christian K., aged 16 years, had suffered since earliest childhood from bladder symptoms. On examination, a large stone about the size of a walnut was detected in the bladder. On 13th December, 1880, the suprapubic operation was performed, the bladder having been filled with carbolic solution, and the rectum distended with sponges. Before extraction of the stone, the vesical wound was enlarged laterally. The stone is of the mulberry variety, extremely hard, weighs 14 grm., is of the size of a walnut, and has numerous projections on the surface, some of them sharp and pointed. On chemical examination, it was found to consist of oxalate of lime. The wound and bladder were washed out with carbolic solution, the drainage tube introduced, the patient laid on the abdomen, and

the wound treated perfectly open, as in the previous cases.
The abdominal position was at first rather uncomfortable to
the patient, and he was permitted to lie somewhat round upon
his side.   From the second to the seventh day, moderate fever
was present (highest temperature 39·4° C. [103·1° F.] on fifth
day), but from the seventh day onwards the patient was free
of fever.   On the 10th day a small quantity of urine was
retained in the bladder; on the 11th day, for the first time,
part of the urine was passed by the urethra.   The wound
granulated well, and the boy was dismissed quite cured on
21st January.

DYSTOCIA FROM HYDROCEPHALUS, WITH · REMARKS.

By JOHN TAYLOR, M.D. Edin.

MRS. M‘K., multipara, residing in Leith, sent for me on the
evening of 17th April, 1880, to attend her in a labour.   On
vaginal examination I found the os uteri admitted only the
index finger, by which, however, the membranes could be felt,
and a vertex presentation diagnosed, although an exact
description of its lie could not be made out, owing to the
situation being yet above the pelvic brim.   Having ascer-
tained that the pelvis was roomy, that her two previous
labours were quick and natural, and not suspecting the
disease now under consideration, I prognosticated that all
was proceeding rightly, but that my services would not be
required for many hours.   Next morning, at 8 A.M., I found
the pains confined entirely to the back; the cervix capable of
admitting two fingers, and the membranes, moreover, were
now found ruptured; after four hours more I ascertained that
the cervix was open to the size of a crown piece, the pains
were much stronger, and, consequently, the head was now
being forced to enter the brim; about this time, therefore, I
was enabled to get a more exact idea of its position in relation
to the bony pelvis—viz., R. O. A.   It was also at this stage of
the labour, just as the head was fixed in the brim, that the
woman, more suspecting than I, asked in wonderment—" Why
am I so long ill, when my previous labours were so quick and
easy ? "   At 1 P.M., the pains being forcible, the head was
driven into the pelvic cavity, and, from the strong develop-

ment of flexion, the anterior fontanelle was out of reach; the occiput, in fact, seemed to occupy by its size all the available space, and helping to muffle any suspicion I might entertain of the condition of the foetal head, this presenting part had no open sutures, but, on the contrary, was firmly ossified, and felt similar to that of any other foetus. At 2 o'clock I found the anterior lip of the cervix, which was jammed between the occiput and the symphysis, rent longitudinally; the uterus was spasmodically contracted, and so tender that I could neither assist by expression applied to the abdominal walls nor ascertain by suprapubic palpation whether or not an enlarged head was the obstacle which baffled the expulsive powers. I now applied a forceps, and after several ineffectual attempts to obtain locking of the instrument, I abandoned its application in the orthodox position, and proceeded to use them in quite the contrary style—viz., with the concavity of the blades looking to the concavity of the sacrum, and to my delight I found that they got sufficient grasp to enable me to bring the head down on the perineum. I now withdrew the forceps, "cave perineo" ringing in my ears, and allowed the pains to effect birth of the occiput, which to sight and feeling was observed to be natural, but to my astonishment the perineum still remained distended enormously by a soft baggy tumour, which I now remarked could be only either a hydrocephalic portion or the head of a second baby locked between chin and sternum of the first. That the tumour was hydrocephalic, I ascertained through obtaining birth of the part, by passing two fingers into the rectum, and shelling the face across the perineum. The child, in other respects a well developed female, having made no attempt at respiration, I deemed it unadvisable to practise artificial methods; the head I ascertained to be perfectly healthy in both parietal and occipital regions, the dropsical distention being confined to the anterior parts, on which great bag there floated, as it were, the two temporal and frontal bones, very widely separated from one another. This pathological state accounted somewhat for my delay in recognising the cause of the dystocia, and also for the blades obtaining sufficient purchase and proximity to permit traction in their heterodox position, owing to their tips sinking in the fluid bag sufficiently to admit partial locking of the instrument. But, in general, to die is no jest, neither is the joke diminished if one perishes by the kick of an ass. At 7 P.M. I found the woman tortured by agonising pain just above the pubes, also vomiting and a rapid pulse; administered 50 drops tinct. opii, and ordered poultices;

regarding the complication as one of cervical rupture, I passed
to the husband an unfavourable prognosis.

19th.—Patient had a restless night; pain extended into
right iliac fossa; is vomiting a greenish fluid; pulse 140;
temperature 102°; to be fed on brandy and egg mixture, and
get draughts of dilute prussic acid in iced soda water.

Evening.—Vomiting incessant; peritonitis extending at its
own wild will over the whole abdomen. Injected sub-
cutaneously ½ gr. morphia with 12 drops ether, and advised
liberal use of the stimulants.

20th.—Nothing lies on stomach; face deadly pale; legs
drawn up; pulse thready; patient rapidly sank. No *post-
mortem.*

Remarks.—Cases of intrauterine hydrocephalus appear to
be sufficiently rare to warrant us in recording them as they
arise. Moreover, I find, on inquiry among several medical
friends, some who have practised midwifery for over twenty-
five years without meeting with their first example of this
disease. The sad issue of my case has naturally directed my
attention closely to the literature of the subject, and I shall
state very concisely what I have found in text book and journal
regarding the mode of making diagnosis of, and the mechanism
of parturition in, this disease. First, as a matter of fact, it
appears that, in the great majority of recorded cases, the
disease remained undetected till after the birth of the fœtuses.
This difficulty of diagnosis arises from the arrest occurring
above the brim, and therefore comparatively out of the
accoucheur's reach. The case I have detailed will show that
openness of sutures is a sign which may be absent; the
correct diagnosis is to be made by ascertaining the nature of
the previous labours, if any. The fact of the head being
arrested above the brim will cause one to measure the diagonal
conjugate, which, if found natural, will cause the accoucheur
to palpate suprapubically, and to place the patient under
chloroform, and make certain by introduction of the whole
hand. In these cases where the children have presented by
the feet, it seems that suspicion has been usually aroused
very soon as to the likelihood of the obstacle being hydro-
cephalus, and that very often one is aided in his diagnosis by
observing that the limbs are emaciated. Rupture of the
uterus, the sad and common accident produced in these cases,
if not promptly recognised and treated, appears to depend on
the thinned and distended cervical tissue being jammed
between the head and the pelvic bones, while the uterus is,

at the same time, propelling and spasmodically contracting upon and retracting itself over the body of the child. The sum of these efforts is communicated to the circumference of the fœtal head which, in these cases, acts as a large fluid bag or hydraulic machine distending the cervical tube enormously and equally in all its diameters. Now, since the cervical tube is fixed, and the expulsive efforts are acting at right angles to it, the tear will occur transversely in the sulcus between the cervix and uterine body, but in a case of hydrocephalus a longitudinal rent will also be found, produced by the simple distension of the cervix. In unrecognised cases of hydrocephalus, as a matter of course, forceps will be resorted to in order to overcome the obstacle; but, if a diagnosis is made, we should avoid the perforator and use the aspirator or very fine trocar, remembering that our lawgivers are not Spartans, and do not permit the destruction of children although diseased. We will be encouraged to practise the latter method by remembering Dr. Conquest's cases of chronic hydrocephalus, treated by tapping, which was found not by any means a necessarily fatal procedure; but, on the contrary, the deaths ensued only after reaccumulation of fluid and its evil sequels.

THE UTERINE SOUND.

By MURDOCH CAMERON, M.D.,

Physician Accoucheur to the Western Infirmary, Glasgow.

THE sound has been long used as a means of diagnosis in uterine affections, but its use has been much extended by the widespread influence of Simpson. With many practitioners it seems to be in daily use as a ready means of exploration in these special affections. No one can deny its utility, yet physicians who have many uterine cases under observation will acknowledge, that although it is when properly used and upon suitable cases an agent for good, its indiscriminate use is productive of a great deal of injury.

With some its use is considered indispensable, and as a result, there is found an increasing number of cases where very serious irritations and lesions ensue, comprising uterine colic, ovaritis, metritis, &c. Instead of using it as a secondary agent, they err in too often making it a primary one.

A description of the instrument would be out of place here,

as it is so well known; but the best have upon the convex edge, and at about two and a-half inches from the point, a little projection as an indicator of the average depth of the healthy uterus. Towards the point, and also towards the handle, you have the distances marked by notches and figures, which show at a glance how far the instrument has penetrated. The credit of the introduction of the uterine sound has been given to Simpson, although some claim the honour for Kiwisch.

With the flexible sounds we are apt to be misled, supposing an advance whilst they may have simply bended upon themselves. Much can be learned by a proper use of the sound. In some cases the sound is used to assure the examiner of the permeability of the uterine orifice, and of the cervix uteri. It serves also to recognise the length, direction, position, volume, and mobility of the uterus.

When the sound penetrates easily as far as the small nodule upon its convex edge, we are certain that the internal os is sufficiently permeable. You find the cervix narrowed in congenital constriction, in stenosis of the os externum, as also of the os internum, as found in cases of acute anteflexion.

If the sound passes into the uterine cavity farther than two and a-half inches, we know that there is elongation of the cavity from some cause or other. The uterus is increased in bulk in endo-metritis, fibroids, polypi, or subinvolution, as also after a confinement or abortion, and as a matter of course in pregnancy. The uterus may be diminished in size, as is found in cases of non-development, superinvolution, and senile atrophy.

If we feel the point of the sound through the relaxed abdominal walls, immediately above or behind the pubes, we are assured that the fundus uteri is in a normal position. If, to pass the sound, we require to direct the point backwards, more forwards, or to either side, and find afterwards that the organ presents itself in its proper position, and that a tumour previously felt projecting into the vagina has disappeared, we have reason to diagnose a flexion of the uterus. What has taken place is simply that the uterine sound has for the time corrected a displacement of the womb. In a case of retroversion seen lately in the Western Infirmary, the replacement was permanent.

If, on the contrary, we recognise by the sound that the fundus uteri is normal and in its proper position, we arrive at the conclusion that the tumour supposed to belong to the uterus is situated outside of this organ, and has perhaps nothing

in common with it. If it is impossible to feel the point of the
sound through the abdominal walls, as generally felt in the
normal state, the cause may perhaps be a tumour situated in
the uterine walls or near them. We remark at times that a
movement communicated to the uterus by the sound does not
displace at the same time the tumour in question, and so we
are able to say that it does not adhere to the uterus. The
sound may at times be useful for the dilatation of a stricture,
chiefly of the os internum. This instrument is therefore of
very great service, both as a diagnostic and therapeutic agent,
but we must not trust too much to signs, many times mis-
leading. The sound may be found to pass only a small distance
into the cavity of the cervix, as, for instance, when a fold of
mucous membrane arrests its further progress. In such a case it
would be a great error to conclude that because the instrument
was thus arrested, there existed an obliteration of the cervix.
Again, you may have elongation with flexion. Here the sound
might pass in a distance say of two inches, and might lead us
to suppose that the uterine cavity was diminished, and that a
tumour was present, but by closer observation we find that the
sound can be passed further, and that the tumour first found
upon examination is simply the fundus uteri, and as we would
expect, with the replacement of the uterus the bulging felt in
the vaginal space has disappeared.

It may seem unnecessary that we should here repeat the
warning, never to pass the sound where there is any reason to
suspect pregnancy, as then you incur the serious responsibility
of producing abortion ; but the too frequent mistake of over-
looking such a condition demands the repetition of this caution.
The utmost care should be taken in the introduction of this
instrument, because without this you may perforate the tissue,
perhaps already softened, or set up peritonitis. Malignant
disease of the cervix or fundus excludes its use, as also acute
inflammation of the uterus or its appendages. It has been
recommended in special cases ; but it is better to avoid any
examination during menstruation, and in no case should the
sound be passed without previously having made a careful
bimanual examination.

To introduce the uterine sound, place the patient as in pass-
ing the speculum, and pass two fingers of the right hand—viz.,
the index and middle, up to the cervix, with the knuckles
toward the pubes, and in the groove formed by the fingers
glide the instrument along, keeping the concave surface
directed backwards. Never forget to have the sound warmed
previous to its introduction. If the passage is straight, as in

females who have never had children, the index finger will be sufficient to guide the sound. If the os is directed downwards and forwards, the instrument is passed into the cavity without rotating the handle; if the os is, however, directed downwards and backwards, the instrument is only allowed to enter the external os, and then the handle is turned so that the point of the sound may be directed upwards and forwards.

If there be any difficulty in making the instrument enter, this is often overcome by slipping the point of the instrument from the finger tip into the os.

We noticed previously that the instrument usually passes into the uterine cavity for two and a half inches, as indicated by the nodule upon the convex edge of the sound. To measure the distance it has passed, place the finger point firmly upon the portion at the os, and, keeping it there, withdraw the instrument, when you can at a glance observe by the engraved figures how far the sound has passed. With sufficient care, we can usually succeed in passing the sound into the healthy womb; but the most experienced finds it often exceedingly difficult to introduce it in certain affections of this organ.

In the various flexions and versions, as also neoplasms projecting into the cavity, we find much to oppose our attempts to pass the sound. In some cases you will even fail, and it is only by the greatest patience that success may reward your efforts. Generally its introduction is free from bleeding, and if traces of blood are seen, it is usually the result of congestion, cancer, fibroids, or polypi. Force should never be used, as you will simply expose your patient to much danger. To lay down special rules were vain, for experience must guide you in each case. Every instrument should have a mark upon the flat surface of the handle, so that the operator may have no difficulty in seeing at once how the instrument is situated. In replacing the displaced organ, say in displacement backwards, the movement is effected by a rotation of the handle through half a circle, so that the portion acting within the uterus may rotate in the smallest degree. A simple twisting of the handle is apt to give pain, and may cause injury. In conclusion, the uterine sound, as before stated, should never be used without previously making a careful examination. So much is this overlooked that a very eminent obstetrician proposes to have a uterine sound made, having for its handle a small representation of a fœtus, which may be the means of causing the operator to pause before using the instrument.

REVIEWS.

Grundriss der Anatomie des Menschen. By AD. PANSCH, Professor in the University of Kiel. R. Oppenheim: Berlin. 1881.

AN elementary book on systematic human anatomy is not, perhaps, at first sight, an inviting theme for the reviewer; yet, if we consider the not unimportant part which Glasgow has taken in the production of anatomical manuals, and the vast importance of right anatomical teaching in rearing students into efficient practitioners, we think that our readers may like to note the character of the instruction offered by an accomplished German anatomist, limiting himself to a single volume of less than 600 pages. The rapid development of medical science in all its departments has rendered the writing of good text books an exceedingly difficult art; and perhaps in no department is it more difficult than in anatomy.

In writing a complete treatise, all detail should be accurately registered, such historical references made as are necessary for the elucidation of the present position of the science, and a full view given of the ascertained functional and morphological, including embryological, relations of the facts of adult human anatomy, while the judgment of the writer will be exercised in selecting from among theoretical novelties those which are sufficiently firmly planted on a basis of fact to deserve prominence. But a copious treatise is not the best imaginable text book for beginners; and it is in writing a text book specially adapted for students, with many other subjects besides anatomy engaging their attention, that the difficulty is experienced of being brief and yet explicit, not sacrificing space to either intricacy or discussion, yet binding facts together with something of scientific conclusion. Necessarily dogmatic in expression, it should yet furnish safe guidance to the reader in the exercise of his intelligence. We shall not now pause to ask how far such a result has been reached in the English language. But turning to Germany; when we consider the extreme length of the elaborate treatise of Henle, and the exceeding little reference in it either to morphology and development, or to function, though in anatomical detail it is a monument of the most painstaking accuracy, we can easily see that German students require manuals greatly more condensed, and containing additional information. We take it that such is the feeling which has influenced Professor

Pansch in the preparation of the excellent *Grundriss* before us; and while his book is not all that we could have wished, we appreciate the plan, and find in the pages much to admire. The descriptions are clear and accurate, although, in some matters, for example the muscles, by no means so complete as the answers which we deem ourselves entitled to expect from a good student up for examination.

In a short introductory paper on the form of the body and its development, some preliminary notions are laid down which we think might, with advantage, be considerably altered. The trunk is looked on as a double tube, a view which is common enough; and we are told that the anterior, the vegetative or visceral tube, contains the vegetative organs—those of nutrition and reproduction; while the hinder and narrower animal or neural tube, contains the central organs of the nervous system. Then, in the description of the vertebral column, schemata are given representing visceral and neural arches of the skeleton, placed in front and behind centra, and bearing at their origins similar relations to the centra. This conception we hold to be fundamentally erroneous. The visceral and neural tubes are not morphologically correspondent structures. The digestive tract is the primary centre of the organism throughout the animal kingdom; and throughout the invertebrata the visceral tube alone exists, if we except the existence of an obscure neural furrow in certain molluscous forms. In the vertebrata, the yelk and the deep division of the blastoderm surrounding it are, equally as in the invertebrates, to be taken as the earliest condition of alimentary contents and walls, although, in the majority, only a portion is developed permanently, while the rest withers away. The visceral tube is formed by the bending round of the main laminæ of the embryo, more or less completely embracing the yelk, while the neural tube, originally open to the surface, is enclosed by laminæ which project from, and are secondary to, the others. Nor are the schemata of the arches of the skeleton, which we have referred to, accurate diagrams for an elementary book of human anatomy, seeing that in the higher vertebrates generally, and always in man, the proximal elements of the visceral arches—namely, the transverse processes, have a common origin with the half neural arches of the corresponding sides, and the ribs do not reach in to the centra. Only in the tails of some animals, especially fishes, are neural and hæmal arches symmetrically placed above and below centra; and surely a segment which does not include the digestive tube can give no typical view of the plan of the organism.

The allusion to a vegetative and an animal part of the body is to a thing which exists; but the two parts lie the one surrounding the other, and the cœlom or pleuroperitoneal cavity is the true separation between those antithetic extremes. We have made these remarks because we think that the subject in question affords a good example of a matter which may properly be handled briefly and dogmatically in a short text-book, but in which much depends on the correctness of the writer's conceptions without his having opportunity of justifying himself.

The osteology in this work is good; and there are short paragraphs referring to the development of the bones. But we apprehend that in this branch of the subject the development might have been made to assist the grasping of the adult structure, just as the author has made use of it in this way in describing the thymus and the reproductive organs. We cannot conceive the possibility of any just comprehension of the sphenoid bone, for example, without adverting to its division into an anterior and posterior part, and the fundamental independence of the internal pterygoid plates and the conchæ; and we believe that no additional space would have been required to mention these facts at the beginning instead of the end of the description, so as to enable the description of the adult bone to be founded on them.

We are glad to see the articulations paid proper attention to. The writer seems to have taken into consideration that they occupy but a short space, and are often indifferently attended to by both writers and dissectors; and he has allowed himself to expand a little, and given us some excellent articles on the movements of joints, which practitioners and teachers may study with profit. We cannot help noticing that there is a thoroughly good figure of the positions of pronation and supination of the forearm, which we commend to the attention of the author of a recent atlas, who seems to imagine that his radius revolves round his middle finger.

The muscles we are disappointed with. Neither their structure nor their functions are given; and we hold the actions and uses of muscles to be most important and too liable to be neglected by the student. The brain is given well; the mantle and root of the hemisphere-vesicles are distinguished after the manner taught by Reichert; that is to say, the whole vesicle is primarily divided into two parts, one including the island of Reil and the corpus striatum, the other the rest of the convolutions.

The viscera and organs of sense naturally occupy but little

room in a work which does not profess to teach histology. Very judiciously, space is found for a short account of the development of the folds of the intestine. We should have liked to see it illustrated with more accurate diagrams; but the author is not singular; for, like him, both Kölliker and Thomson appear to be unaware that the completely developed cæcum and appendix vermiformis are found closely under the pylorus, and only after their complete formation do they begin to travel in a curved direction to their ultimate situation. We are glad to see the stomach correctly represented in a much more vertical position than that which it used to be described as occupying. We should recommend the writer to extend the same precision to the representation of the duodenum, which, previous to its termination, we venture to say, is uniformly vertical in position for more than an inch, and visible in half its breadth on the left of the commencing mesentery.

We commend the clearness of the typography and the fine grain of the paper to the consideration of British medical publishers. The illustrations are variable, some of them excellent, others very poor, and some of the poorest are unnecessarily repeated, occupying space which in a future edition might be devoted to the improvement of the muscular system.

We take farewell of this work with grateful feelings to the author, feeling that he has made valuable advances towards the solution of that difficult problem, the preparation of a good compendious manual of systematic anatomy.

The Laws of Health. By W. H. CORFIELD, M.D., Professor of Hygiene and Public Health at University College, London. Longmans, Green & Co. London, 1880.

THIS is one of a series of science class books, edited by Professor Foster and Philip Magnus, B.Sc., and "composed with special reference to their use in school teaching." Professor Corfield's contribution to this series is a compact little book of 152 pp., which, after a careful perusal, we are free to pronounce a wonderfully complete compendium of matters relating to public health. The only fault we have to find with it is that it enters much too fully into these matters for an elementary school book. The author himself says, in his short preface, that "household sanitary arrangements have been explained more in detail than may be thought by many to be necessary in a text book for schools:

this has been considered advisable on account of the great
importance of the subject, and the growing interest attaching
to it, and in order that the book may be more widely useful."
This admission applies, in fact, not to this section alone, but
to the whole of the work. A more humble effort, though
possibly, also, a more difficult one, would better have met the
very rudimentary and general necessities of school children.
Still, we cordially extend, also, to the whole book that which
Professor Corfield claims for this section only—a wider sphere
of usefulness than a mere school book could affect. We detect
everywhere the "full mind" of the accomplished Professor of
Public Health, and we commend his little book to the practi-
tioner as one which he may, with much advantage and with
little encroachment on his scanty leisure, read; and, also,
which he may advise his more intelligent patients to purchase
and study. It must be confessed that the profession, especi-
ally the older members of it, is not too well up in practical
hygiene; and it would be well if both the family physician
and the family man were armed and aided by such knowledge
as Corfield's *Laws of Health* will, for the small sum of eighteen-
pence, put them in possession of.

Manual for the Physiological Laboratory. By VINCENT
    HARRIS, M.D. Lond., M.R.C.P., and D'ARCY POWER, B.A.
    Oxon.   London: Baillière, Tindall & Cox.   1880.

THE object of this book is to give "a short account of the
histology and chemistry of the various organs, together with
the methods employed in the preparation of the tissues for
the microscope," and is intended for the use of students
attending classes of practical physiology. For this purpose
it is divided into two parts, the first being devoted to practical
histology, the second to physiological chemistry. At the
beginning of each section is a list of apparatus and reagents
necessary for the work; and under each tissue an enumeration
of the varieties, an account of the methods of preparation,
and a short, but in most instances very complete, description
of the general characters and minute structure is given. The
first section—that devoted to histology—is well put together,
and, considering the size of the book, is wonderfully clear,
and will no doubt fulfil the purpose for which it is written.
We cannot, however, make the same remark regarding that
portion of the book which is supposed to treat of physiological
chemistry. It is little more than a list of proximate principles

and reactions, in all occupying seventeen pages of the book; quite enough when we consider the way the facts have been huddled together, but certainly not sufficient to convey an intelligent idea to the student. It would have been better if this part of the book had been omitted, as it tends only to spoil a manual which, in other respects, is exceedingly good.

Aids to Physiology. By B. Thompson Lowne, F.R.C.S. Eng. London: Baillière, Tindall & Cox. 1880.

This book belongs to a class with which we have no sympathy. It is "specially designed for students preparing for examination;" and, although it is pointed out in the preface that "the student must not expect to acquire a sufficient knowledge of physiology from so short an epitome of the subject as the present little book affords" (an observation which seems to us quite unnecessary), we are not persuaded that such a production can be of assistance to the student, either in preparing him for examination or in putting together the knowledge he has already acquired. For both of these purposes it would be better for the student to prepare an "epitome" for himself, and the probability is that in the end he would not only possess a better knowledge of physiology, but also a more accurate, and certainly more interesting, compilation than the one now before us. This book contains a number of painfully condensed facts, massed together as if intended to confuse rather than assist the student. We cannot recommend this book for the purposes for which the author intends it. No doubt it has a destiny.

The Examination of the Pulse, including a Description of the Sphygmograph. By Byrom Bramwell, M.D., Edinburgh.

This pamphlet is a reprint from the *Edinburgh Medical Journal* for December, 1880, and contains an exposition of the characters of the pulse in health and disease, as felt by the finger and registered by the sphygmograph. The information will be useful to the student, but there is nothing calling for special note, the doctrines set forth being those commonly received. The sphygmograph described is that of Marey, with Mahomed's modification for the regulation of the pressure. No mention is made of Pond's new instrument, which is certainly more easily applied than Marey's, is on the whole more delicate, and has the additional advantage that cardiac tracings can

also be taken with it. By the way, Dr. Bramwell twice speaks of Mahomed's " concentric." Should this not be " eccentric ? "

The author adopts Foster's views as to the causation of dicrotism; but it would have been well to indicate what other theories are entertained on this *questio vexata.* He shows how the diminution or exaggeration of the dicrotic wave is related to tension, but he has not mentioned the fact that its position in the diastolic part of the tracing is also a valuable guide to the tone of the vessels. Tracings are given showing its almost total obliteration in free aortic regurgitation.

The tracings with which the text is abundantly illustrated are typical and beautifully executed. The pamphlet will form a useful introduction to the clinical study of the pulse, and may possibly incite to deeper and more critical investigation.

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

GLASGOW ROYAL INFIRMARY.

FROM DR. SCOTT ORR'S WARDS.

CHOREA PRECEDED BY SCARLET FEVER AND FOLLOWED BY PERICARDITIS. [Reported by C. Buchanan Hunter, resident physician.]—A. Y., æt. 11, school girl, admitted 31st December, 1880, complaining of involuntary movements of the body of little more than a week's duration. The mother of the child states that the father is " a nervous man," but that she and the rest of the family are quite healthy. There is no history of any nervous affection, nor of rheumatism, further than that a step-sister of the patient suffered from the latter complaint. The patient's face, when quiet, presents a vacant imbecile aspect; when asked a question she stutters out her answer. This difficulty of expressing her ideas seems to arise simply from deficient power of articulation, because when she does manage to speak, the statements are rational and indicate the ordinary amount of intelligence in children of her class. If she is placed on her back, with the arms and legs in the

extended position, and asked to remain quiet, she does so only for a moment or two, as certain fidgety movements are soon observed in the arms, while there is an evident effort exhibited to control the muscles of the face. This is followed by a movement of the trunk forwards and upwards, as if there was something under her that she wished to avoid: sometimes the body is rolled from side to side. Her walking is so much impaired that it is with difficulty she can get along, even with two persons assisting her. On examination of the chest a distinct mitral regurgitant murmur is heard. The mother states that the child has always been delicate and had frequently to be at home from school on account of headache, weariness, &c. She was smart in learning her lessons, and was generally at the top of her class. Nine months previous to present complaint she took scarlet fever, for which she was confined to bed for a month, and was in quite good health two months afterwards. She remained well till the present complaint attacked her. Her step-sister has given a more definite cause of present illness. She says that the father and mother were accustomed to periodic debauches which frightened the little girl so much that she frequently ran out of the house into the cold air at night, very scantily clad, and made her way to her step-sister's house, cold and shivering, and in an exhausted state. Apparently in dread of a drinking bout at the New Year, the child was observed for about a fortnight before to be taking very little food, was dull and apathetic, shunning her companions and taking little interest in her school lessons. On the day before Christmas the drinking began, and on the following day the child was seen to be affected in her movements for the first time. The left arm appears to have been first affected, then the muscles of the face, the left corner of the mouth being every now and then drawn up, and latterly the left eye quickly and periodically closed as if she was winking at some one. Then she was noticed to protrude her tongue and frequently to bite it. She then became peevish and irritable, and was sent to the hospital. An aperient having been administered she was put on *liquor arsenicalis*, three minims thrice daily. She rapidly improved, and was almost well by 26th January, on which day she went over to the surgical side of the house to see a friend. She seems in this way to have got a chill, although she had been out of the ward before. On the following night she had a slight cough, and this was followed by shortness of breath, with a feeling of uneasiness over the cardiac region, which soon amounted to actual pain. On examining the chest on the third evening,

a very marked and distinct pericardial friction sound was made out, and over the lungs a few bronchial râles. A blister was at once put on over the breast. The next day she felt slightly better and was ordered grey powder and opium. After this the patient gradually improved in her breathing, the pain decreased, and by the sixth day the friction was gone, leaving a slight increase of the cardiac dulness. *Feby. 12.*—At present date the dulness is gone, the choreic movements have quite disappeared, and the child is in good spirits and is taking her food well.

WESTERN INFIRMARY.

REPORTS UNDER THE SUPERVISION OF DR. W. G. DUN.

FROM PROFESSOR MACLEOD'S WARDS.

TWO CASES OF ALVEOLAR CYST: OPERATION: CURE. [Reported by Mr. William Howells.] CASE I.—The patient, a weakly woman, aged 36, was admitted 23rd September, 1880. Two years and a-half previous to this, she first noticed a hard swelling of the gum, and a fulness of the right cheek, due, as she thought, to a gumboil. An aching pain was felt in the swelling, shooting up to the eye. The gum was twice lanced and some fluid discharged; but as no permanent relief was obtained she entered the hospital. Her condition was as follows:—Most of the upper teeth had been extracted at different times, but at a point at the right side of the upper alveolar arch, corresponding to the first molar, there was a small sinus, above this was a firm immovable tumour, about the size of a large walnut, extending into the superior maxilla. The anterior bony wall yielded slightly to pressure, but there was no crackling. There was some fulness externally just under the right eye. The skin covering the tumour was unaffected, and no glands were involved.

On 1st December chloroform was administered, and Dr. Macleod opened the tumour from the mouth, removing the most of the anterior osseous wall with forceps. The interior was filled with granulation matter. This was scraped out and the cavity syringed with carbolic solution, and finally stuffed with lint. On the following day the lint was removed, and the part syringed daily till patient left on the 6th, when the swelling from the operation had subsided, and the wound was contracting. A few weeks later she returned to show herself, the

wound was then closed, and the fulness of the cheek had almost entirely disappeared.

CASE II. In this case also the patient's health was very indifferent. She was aged 45, and was admitted on 3rd June, 1880. The history of the case is very similar to the preceding one. Two years and a-half before admission she began to complain of what she considered a gumboil, at the root of the first bicuspid on the right side of the upper jaw. At times she suffered acute pain.

At the date of admission to hospital a large rounded tumour occupied the right cheek, immediately below the orbit, and extended downwards to the angle of the mouth. It was firm and immovable, the skin over it glazed, and the capillaries congested. Pressure over the lower and outer portion of the tumour was painful, and there was a distinct egg-shell crackle. There was a slight discharge into the back of the throat, issuing apparently from the right nasal cavity. There was no glandular enlargement.

On 9th June Dr. Macleod operated in exactly the same manner as in the preceding case. The result was quite satisfactory. The patient was dismissed on the 15th, and when seen three weeks later, the fulness of the cheek had quite disappeared, and the pain was gone.

HARD CHANCRE OF LIP.—M. M., æt. 22, saleswoman, was admitted 29th October, 1880. She is a strong, healthy girl, and seems to have been unusually exempt from illness throughout life. About six weeks previous to admission into hospital, a small hack appeared in the middle of the upper red lip; this became painful and inflamed, and ultimately an open ulcer formed, and gradually spread over the lip, defying all treatment.

Condition on Admission.—Occupying the middle of the upper lip was a raised ulcer, circular, and about the size of a shilling, its base was hard and cartilaginous, and the forepart was covered with a scab. Free movement of the lip caused pain and bleeding. The entire lip was thickened and everted, and the glands behind both angles of the jaw and under the chin were enlarged. There was a distinct measly rash over the lower part of the chest and the abdomen.

The patient was quite ignorant of the real nature of the sore, but its appearance was perfectly characteristic, and if any doubt had existed it would at once have been removed by the presence of the secondary eruption, about which, too, the patient was quite ignorant.

Treatment.—The ulcer was merely protected, and bichloride of mercury and chlorate of potash administered internally.

On 15th November it was noted that the base of the ulcer was less firm and cartilaginous, and the measly rash was fading. By the 17th the ulcer began to diminish in size, and a healing line could be seen. On the 18th it was dressed with a solution of potassio-tartrate of iron. When patient left on the 21st, the ulcer was perfectly healthy, was much smaller, and the effusion into the surrounding tissues rapidly subsiding. On the 29th, having continued the medicine in the meanwhile, she returned to report progress, the ulcer was completely healed, but the thickening had not entirely dispersed, and the glands still remained enlarged. All eruption had gone.

Dr. Macleod had a second case in the hospital some time ago, with an almost identical history. The patient was a healthy young servant. The nature of the sore was recognised on admission, but only local treatment was employed till the secondary syphilitic eruption appeared. The roseola was very plentiful and characteristic, and it and the sore (for which, before admission, many useless local applications had been tried), both disappeared quickly under the use of the bichloride of mercury.

FROM PROFESSOR GEORGE BUCHANAN'S WARDS.

FRACTURE OF BASE OF SKULL—RECOVERY. [Reported by Mr. James K. Love, M.B.] Peter S., æt. 26, a builder, was admitted 1st December, 1880, about 5 P.M. About half-an-hour before admission, patient fell from a height of twenty feet, an iron column which he was manipulating falling with him, and striking him severely on the head. On admission he was found to be suffering considerably from shock; he complained of pain in the right temporal region, but was not comatose, although stupid and unable to give any account of himself. There was bleeding from the right ear and from the posterior nares, the latter causing the formation of large clots in the mouth. The stream from the ear appeared to be pure blood, but examination of the stains made by it on linen raised the suspicion of a watery element existing with it. Soon after admission he passed urine voluntarily. Two minims of croton oil were ordered within an hour of admission, and brandy to the amount of tea-spoonful doses every half hour was given to meet the shock. Within twelve hours he was so much better that the latter could be withdrawn. The croton oil had produced copious movements of the bowels. The bleeding was diminishing, but continued to some extent for two days, both from the

right ear and from the posterior nares. Patient was able by this time to answer questions more intelligently, and could remember more of the circumstances connected with his accident than on the evening of admission. There was also very evident improvement in his general condition.

Notwithstanding these signs of improvement, the continuance of a transparent yellowish exudation from the ear caused a more careful examination of the ear to be desirable; and Dr. Barr was called, and reported a distinct rupture of the tympanic membrane. The fluid which continued to exude was submitted to Dr. Newman for examination, and was found to respond to the tests for cerebro-spinal fluid. The former examination was made about ten days after admission; the latter on 17th December.

The patient continuing to improve he was dismissed on the 8th of January, 1881. The discharge from the ear continuing, although in diminished amount, he was made an outdoor patient at the Ear Dispensary of the Infirmary. The most marked feature of his case on admission was distinct facial paralysis of the right side, along with impaired hearing of the corresponding ear.

3rd February.—Patient returned to-day to report himself. His general condition continues satisfactory. There is still some slight discharge from the right ear, but the facial paralysis is much less marked than on the date of admission.

Remarks.—That this is a case of recovery from fracture of the petrous bone is evidenced by the discharge of cerebro-spinal fluid from the meatus, and the co-existence of very well marked facial paralysis and deafness on the side of injury.

Note by Dr. Barr.—Since his dismissal from the wards of the Infirmary, P. S. has been under treatment at the aural department of the dispensary for a purulent discharge from the right ear, along with defective hearing on that side. This discharge is issuing from an oblong-shaped perforation in the *membrana tympani*, behind the lower half of the manubrium, with which the long diameter of the perforation is parallel. This perforation is in the situation of the rent observed shortly after the admission of the patient to the Infirmary, and is due to a loss of the substance of the membrane surrounding the original cleft, which loss is to be explained by subsequent inflammation and ulceration. The matter is secreted by the tympanic mucous membrane, which is red and swollen, as seen through the perforation. The purulent secretion is gradually lessening under the action of a solution of

sulphate of zinc, which is brought in contact with the mucous membrane of the tympanum by inflating the middle ear (by Valsalva's and Politzer's methods), while the external canal of the ear is filled with the solution.

The tick of a watch, heard forty inches from the ear in normal hearing, is not heard by the patient farther off than eight inches from the affected ear. The hearing capacity of the right ear, however, has been gradually improving, and is likely to improve still further when the congestive swelling of the tympanic tissues has been removed and the perforation closed.

A vibrating tuning fork, placed on the middle line of the head, is heard very much better on the affected side—presumptive evidence of a sound condition of the labyrinthian structures.

The only evidence of facial paralysis now remaining is a slightly less perfect contraction of the orbicularis palpebrarum on the right side as compared with the left, in active facial movements, as in laughing, &c., there seems to be almost complete equality of movement on the two sides.

From Professor M'Call Anderson's Wards.

SCLERODERMA ADULTORUM. [From notes supplied by Mr. John Lindsay Steven, M.B.]—Helen M., æt. 13, machinist, was admitted to Ward VII, 1st November, 1880, complaining of an affection of the skin of the left upper extremity, extending from the shoulder to the thumb. The family history is very good, though one sister has been "delicate," and a sister of her mother's had what appears to have been psoriasis. The previous personal history of patient herself is excellent. The present affection set in as follows. Ten months before admission the skin of the left shoulder became very black, "like a black eye," and went through all the changes of an ordinary ecchymosis. The only cause that could be assigned for this, was that at this time she was in the habit of assisting her sister to carry heavy baskets of clothes to a bleachfield, using in this work the left arm generally. About six weeks thereafter increasing stiffness about the elbow joint, supposed to be due to contraction of the "leaders," but evidently due to a tightening of the skin over its flexor surface, was observed. Three months before admission she had an attack of acute inflammation in the arm, most marked just below the shoulder. It is said to have looked very like an attack of erysipelas; but subsided in about forty-eight hours under the use of fomenta-

tions, &c.   Occasionally she suffers from slight shooting pains in the shoulder.

The following are the appearances at present.   The disease extends from the top of the shoulder to the thumb.   On the shoulder there is a patch of affected skin, somewhat circular in shape, and measuring about 5 inches by 4.   The affected area is of almost bony consistence, and is bound down to the subjacent tissues.   It is of a lighter colour than the surrounding skin, which is pigmented at the margins of the patch.   This condition extends in a somewhat linear manner down the whole arm as far as the thumb.   Starting from the top of the anterior axillary fold, it passes down the upper arm rather to the inner side of the biceps, then across the flexor surface of the joint about its middle, and down the forearm to the thumb along the inner edge of the supinator longus.   The affected surface is firm, glistening, and paler than the healthy skin, except in front of the forearm, where it is deeply pigmented. Here and there it is covered with furfuraceous scales; and minute linear furrows are noted.   The hardening of the affected surface is so characteristic that the disease can be traced in its whole extent by touch alone.   The movements of the arm are considerably interfered with.   The elbow can be flexed readily, but not extended beyond an angle of about 180°. The shoulder is affected to a less degree; but the movements of the wrist and thumb are considerably impeded, those of the latter so much so that it cannot be closed upon the palm.

Since admission, patient has had two attacks of redness and pain in the arm, which seem to have been very similar to that recorded in the history as having occurred three months previous to admission.   The redness, however, was not confined to the arm, but spread over the chest, and was accompanied by sore throat and fever.   The first happened about 22nd November, 1880; the second on 18th January, 1881.   With these exceptions, the general health of the patient, during her residence in the Infirmary, was very good.

The treatment has consisted in giving tonic medicines, and causing her to take a vapour bath every second day; but it has not been attended with much success.

Remarks.—This, though a well recognised form of disease, is nevertheless somewhat rare.   It has been described on the Continent by Kaposi; and Dr. M'Call Anderson, in the course of his experience, has seen it a good many times. Mention of two cases, one of which is reported in full, is made in the work of the latter, *On the Treatment of Diseases*

of the Skin, with an Analysis of Eleven Thousand Consecutive Cases, at page 56 (Macmillan & Co., 1872). A short note of a case, which was under Dr. Anderson's care about three years ago, will also be found in the *British Medical Journal* for 8th December, 1877. The etiology of this disease is very obscure, but it has been supposed to be due to stasis of the lymph in the lymph spaces, followed by marked increase in the connective tissue and elastic fibres of the cutis and subcutaneous cellular tissue, and often by excessive deposit of pigment in the mucous layer of the epidermis. It is not identical with sclerema of infants, which presents somewhat similar appearances.

THE GLASGOW HOSPITAL AND DISPENSARY FOR DISEASES OF THE EAR.

UNDER THE CARE OF DR. CASSELLS.

CASES OF DISEASE OF THE MASTOID BONE TREATED IN THE HOSPITAL. [Reported by James C. Robertson and George Haddow, Clinical Assistants.]—CASE I. Hugh M'D., æt. 32. Admitted to the hospital, 10th November, 1880. Complaining of pain in the left ear with discharge. Three weeks previous to admission patient had a bad cold; and his left ear became exquisitely painful. The pain continued with unabating severity for four days, at which time the ear began to discharge. With the occurrence of the discharge the pain was greatly relieved. At time of admission there was a copious discharge of muco-pus from the ear. The hearing was not much impaired; and there was no tinnitus. Two days after admission there was found to be tenderness on pressure over the mastoid process. A free incision, extending through the periosteum, was made over the mastoid. This gave immediate relief; and the patient rapidly improved, the temperatures, which had been over 101° F., falling to normal. The wound was treated antiseptically with boracic acid. The muco-tympanitis was also treated antiseptically, and the tympanum was inflated daily by Politzer's method. Though there was considerable pain on inflation at first, this rapidly diminished after the mastoid incision had been made. The left membrana tympani was perforated, and the discharge from the meatus continued for three weeks, by which time it had ceased, the patient then being dismissed. (29th November, 1880.) Hearing on dismissal was good.

CASE II. Robert L., æt. 12. Admitted 7th December, 1880. Complaining of pain in the left supra-auricular region, and discharge from the left ear. A month ago a pain occurred in the left ear—it subsided in three days, by which time the ear had commenced to discharge. A fortnight previous to admission he felt pain behind the ear, which gradually subsided. On admission there was a muco-purulent discharge from the left ear; and the tissues over the mastoid were boggy, but no fluctuation could be made out.

Four days after admission a slight feeling of fluctuation was felt. An incision was made over the mastoid, and a small amount of pus was discharged. The wound was treated antiseptically with boracic acid, and the boy made a good recovery.

Examination of left meatus showed that the hitherto bulging superior wall of the meatus had returned to its normal place and condition. The ear was also treated with boracic acid, and the discharge ceased in less than a fortnight, when the boy was dismissed cured. (21st December, 1880.) Hearing normal.

CASE III.—James M'A., æt. 36, admitted 17th November, 1880, complaining of great pain and impaired hearing in the right ear, from which there was a copious discharge. A fortnight previous to admission patient experienced sudden pain in his right ear. Three days after this the ear began to discharge, and the pain abated slightly. When admitted patient was in a state of high fever. Cerebral breathing rapid, and pulse feeble; profuse sweating, and there were small secondary abscesses on various parts of his body. His expression was one of great anxiety. A week after admission there was tenderness on pressure over the mastoid; an incision was made over this process in the usual place, and extending through the periosteum. This somewhat relieved the symptoms, and the wound healed rapidly. Seven days after this the tenderness over the mastoid returned, and all the former symptoms were greatly aggravated. The former incision over the mastoid was re-opened, and the state of the periosteum examined. It was found to be healthy, and the conclusion was come to that the intense pain in the head, the symptoms of pyæmia, and the cerebral breathing, with the absence of any apparent defect on the surface of the bone, were due to a collection of pus within the mastoid cells. It was resolved, however, to wait the effect of this second incision of the periosteum.

At 10 P.M. on the evening of the same day, the condition of

the patient being worse than it had been in the morning (temperature 102° F.), Dr. Cassells operated upon him, with the object of giving exit to the pent-up pus in the following manner:—The periosteum was reflected from the mastoid. The surface of the bone was then carefully examined, and found to be healthy. An opening, therefore, was at once made into the mastoid cells, about half-an-ounce of odourless pus escaping. The patient, on recovering from the chloroform, expressed himself as greatly relieved. All the bad symptoms rapidly subsided; temperature next day being 100° F. These wounds were all treated antiseptically.

The otorrhœa was treated from the beginning with boracic acid, and the patient was frequently politzerised, to prevent the discharge from collecting in the tympanic cavity. The discharge from the ear gradually diminished in quantity, and when it ceased patient was dismissed (31st December, 1880), after being in the hospital six weeks.

The membrana tympani was perforated in its inferior quadrant, but the hearing was very little lessened.

CASE IV.—Alex. O., æt. 14, admitted 2nd December, 1880, complaining of a discharge from the right ear of many years' duration; also of an open sore behind the ear.

About ten years ago a pain occurred in his right ear; shortly after this the discharge appeared, and has continued almost constantly till now, but the pain only occurring at intervals. A few months after the discharge had commenced, an abscess formed over the mastoid process, which burst externally, and has since then continued to discharge. On admission, the mastoid process was covered by exuberant granulations, the surrounding tissues being swollen and boggy. The discharge from the surface and from the meatus was very fœtid, and had the characteristic odour of caries. With the probe the surface of the bone was found to be laid bare for the space of an inch beyond the sinus. Patient's health much impaired. Heart's action very irregular. There were no symptoms of pyæmia present, although at times his condition caused grave doubts as to his fitness to undergo any operation. Examination of the ear showed a granular mass springing from the osseous wall of the meatus, nearly occluding the canal. This part was probed and found to be carious. A week after admission, his condition having improved, Dr. Cassells decided to operate upon him. An incision was made through the swollen tissues to the surface of the mastoid, which was found to be denuded of its periosteum in its whole extent, there being caries of the outer surface of the bone. After reflecting the auricle and exposing

the osseous meatus, which was carious also, all unhealthy bone was gouged out and scraped away; then the tissues were replaced *in situ.* Good drainage being procured, the wound, being kept antiseptic with boracic acid, rapidly healed. When under the influence of the chloroform, the heart's action was found to be regular.

A small discharge still exists from the right ear, but is rapidly diminishing in amount, and when it ceases, the patient will be discharged cured. His health has greatly improved, and is much better than it has been for many years.

PRIVATE PRACTICE.

Reported by Dr. J. WALLACE ANDERSON.

CASE OF HÆMORRHAGE FROM THE RECTUM—TREATMENT BY PYROGALLIC ACID.—In the January number of our *Journal* for 1879, there is an "Item" from the *Dublin Journal of Med. Science* on "Pyrogallic Acid in Internal Hæmorrhage." In the following case, which is itself one of an unusual character, I tried the remedy as recommended in the above "Item," with the best results:—A young lady had, for four or five years, suffered from an almost daily, though, as a rule, slight discharge of blood from the rectum. A doctor was consulted, and the question of piles was raised, but she would not permit an examination to be made. Her health, naturally good, began very gradually to be affected, but as the hæmorrhage was at no particular time excessive, she still delayed treatment. It having, however, increased of late, she consulted me, and I ascertained the following facts:—1. The discharge presented all the characters of fresh blood, and came away equally freely, and without warning, whether the patient was lying, sitting, or taking active exercise. 2. There was not, and there never had been, the slightest pain in the bowel on defecation, nor did the bleeding occur specially at that time. 3. Though, as a rule, of almost daily occurrence, the hæmorrhage sometimes ceased for three or four weeks. 4. The catamenia were quite regular. On general grounds, I was certain of the accuracy of her statements. (These conditions seem to point to some lesion of the rectum, or at least the lower bowel, and yet preclude the idea of piles, fistula, or even of polypus). Before insisting on an examination, I tried the ordinary astringents and hæmostatics, including ergot, but

without any result except causing nausea. I then gave pyro-gallic acid in one grain doses three times a day. This was readily taken in water, without causing the slightest derange-ment of the stomach, and in one week the bleeding had completely ceased. For a few days after its cessation, she had a feeling of uneasiness in the loins, but this soon went away. It is two months since then, and she continues perfectly well.

15th February, 1881.

MEETINGS OF SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

SESSION 1880–81.

MEETING IV.—17TH DECEMBER, 1880.

PROF. GEORGE BUCHANAN, *President, in the Chair.*

DAVID NEWMAN, M.B., gave a resumè of the report of the committee on ANÆSTHETICS, a notice of which has already appeared in our pages (see the January No., p. 38).

The *President*, after commenting on the interesting nature of the paper and the importance of the subject, remarked that Dr. Newman was one of a Committee appointed with a view of finding the effect of anæsthetics on animals, and then they undertook to fix on one that was less liable to produce bad effects on the respiration and pulse than chloroform had shown itself to be, and make experiments with it. After hearing the result of experiments on animals with ethidene dichloride, he (Dr. B.) was satisfied that it was or ought to be safe in its administration; and as the experiments had shown that one of the dangers of chloroform was likely to be absent under its use, he had felt at liberty to use it on the patients under his care in the Western Infirmary during the whole of last winter. As the trial would not have been efficient unless it had been given without any selection of cases, he arranged that Dr. Newman should come to the infirmary on the days on which an anæsthetic was to be given, and make observations, taking the responsibility of the administration of the anæsthetic. In every case in which he was present the ethidene was used without selection, though there were a number of cases in

which chloroform was used when he was not present.   Though the number of cases it was used in was too small to convince any one of its absolute superiority over chloroform, if there is any, yet one thing was noticed, that it never in any case in which it was given caused that pallor of the face and skin which sometimes causes so much anxiety with chloroform. And it was also marked that the patient was never in that state of collapse seen in one who has been kept under the influence of chloroform for a long time, and which causes so much anxiety in restoring the patient.   Every one who gave chloroform must be convinced that it was a dangerous agent ; but he thought, considering the very large number of cases in which he had given an anæsthetic during his practice, almost with impunity, that from the few patients on whom ethidene had been tried, no comparison as to safety over chloroform could be made.

Dr. Macewen remarked that he was rather surprised at the conclusion the Committee had come to, that ether was the most reliable anæsthetic, for he had thought that ethidene was much better than ether or chloroform. He had had very little experience with ether, but had used chloroform in a large number of cases, and so far had felt perfectly safe, though it always gave some concern by its need of constant watching, and because sometimes a stoppage or a hitch from its use occurred during the operation.   The only death he had had was one which probably would have occurred under any circumstances, for it was found that the lungs were œdematous and the ventricles filled with serum. Some hesitation was felt in putting the patient under chloroform, but as the operation had to be performed, it was given.   He had been much struck with a case in which the President had intended to put a patient under chloroform for operation, but had been prevented from fulfilling the engagement.   At the time the patient would have been under the anæsthetic he died from a fit of apoplexy, and of course, if it had been used, the chloroform would have had the credit of his death.

In the few cases in which he had given ether the worst thing noticed was the nervousness and excitement that followed its use, the patient tossing about in the bed, and complaining of a burning sensation, and of the odour of the ether continuing for some days.   The tossing about was the most inconvenient, and might even be a danger in itself, by inducing secondary hæmorrhage where a large vessel had been tied, or do damage by deranging a limb that had been put up in a splint.

Dr. Thomas stated that before coming he had looked into

the subject, and the results of twelve years' experience in the Royal Infirmary were, that giving to each surgeon one case per day put under an anæsthetic (and that was a very moderate average), chloroform had been given upwards of 30,000 times. During that period three deaths had occurred, or one in rather more than 10,000 cases, a very small mortality indeed. Two of the deaths were from want of air, one in a small, low roofed room, the death occurring almost instantaneously while the surgeon was sitting by the bedside ; the other in the dispensary, a small room, crowded with students. The third one, which Dr. Macewen had already narrated, occurred in the theatre where want of air could not occur. Ether and ethidene he thought would, if good, work their way gradually into use; but so long as chloroform put the patient more rapidly into a state of insensibility it would be preferred.

Dr. T. Beath Henderson remarked that he had had some clinical experience with ether, and that he always gave it with the cone, and that he used a little chloroform first as it soothed the bronchi, and was followed by less irritation than when ether was used alone. He usually took about five minutes to put the patient under its influence. Often it caused a great deal of salivation, and in some a great amount of struggling, but in many cases there was less struggling than with chloroform, and when perfectly under they lie quite quiet. Reflex action, as tested by touching the eye, does not seem to be so well abolished with ether as with chloroform, but on proceeding with the operation no flinching occurred. Vomiting was found in some, just as in chloroform, and not in others. Ether is coming into use more in England than in Scotland, partly because of the nature of the public inquiry which there follows any sudden death, the surgeon being often asked why he did not use ether as the safer anæsthetic.

Dr. Kirk remarked, with regard to the death-rate Dr. Thomas had shown with chloroform of 1 in 10,000, that ethidene had not yet been used in nearly so many cases, and a death had been recorded.

The Committee, he said, had shown that chloroform was more dangerous than ether, and although admitting this, he thought they had not given chloroform a fair hearing in discussing wherein the danger lay. They said that it had a disastrous effect on the heart and respiration, and that a dog died more rapidly under it than with ether, but this only shows that it is a more powerful agent than ether, and therefore they should have taken the amount of each which would produce anæsthesia in the same time, to get a fair comparison ;

for if the air be saturated with chloroform vapour, an overdose would be given, and not with ether, as it is not so powerful an agent. Just as if equal doses of chloral and morphia were given, one would kill and the other not, showing not that one is more dangerous than the other, but that it is stronger, and that a proportionate dose of each should have been used. Professor Lister found that with chloroform on a towel at 70° F., the percentage of vapour given off was $4\frac{1}{2}$; but on repeating the experiment Dr. Kirk only got $3\frac{1}{2}$ per cent, and thought therefore that one danger in using chloroform was in not using enough. He had given ʒss. every 60 seconds till the patient was under, and had found that it acted well. Another danger with chloroform lies in withdrawing it too soon, for in the diagrams shown the pressure fell after the chloroform was stopped.

Mr. John Reid thought the Committee had shown distinctly that there was danger in using chloroform, and that ether was safer, ethidene lying between those two. He thought the practical deduction to be made was, that the surgeon would have to decide which of the three to use, according to the individual case; as in a case of aortic disease he would give ether, and where there was no doubt as to the heart's action, chloroform, using ethidene as a medium agent in other cases. There is another thing which is not taken into account sufficiently, and that is, giving anæsthetics in cases of minor surgery, where it is entirely unnecessary, as in a case not far back, where a death occurred in Guy's Hospital during the amputation of a finger, an operation where only a stroke of the scalpel is required.

Dr. W. L. Reid remarked that he was the first medical man put under the influence of ethidene by the Glasgow Committee, and having taken chloroform twice before, he was so far able to compare the sensations of going over. There was no difference whatever, and the anæsthesia was complete, no pain whatever being felt. The price of ethidene, he thought, would be a serious drawback to its use for some time; for though he had used it in a few cases, in the first one, where he gave it very freely, he did not receive a note of the price till the day after.

Dr. Joseph Coats was glad that Dr. Kirk had spoken, for he had experimented largely with anæsthetics. Dr. Kirk seemed to think that the disastrous results found in animals were due to an overdose, and that an overdose could hardly be given when a towel was used to administer the chloroform with. In most of the experiments made by the Committee

a towel was held over the muzzle of the animal, though in some artificial respiration was used, and as had been shown, chloroform produced disastrous results, either by a sudden and rapid fall of pressure, or by a gradual fall which, if continued long enough, would reduce it to nothing, when the animal, of course, would be dead. It may be said that this is caused by an overdose; but how was an overdose to be prevented? It was, he maintained, immensely easier to give an overdose of chloroform than of ethidene, and of ethidene than of ether. He thought the outcome of the experiments was to show that chloroform was a dangerous agent, and that it should be administered under a most grave sense of responsibility, and that ether, compared with it and with ethidene, was a comparatively safe agent, though ethidene was safer than chloroform. It remained for practical men to decide whether ether would suit their purposes, and he had no hesitation in saying that if it could be got to do so, it should supplant chloroform.

In reply to Dr. Macewen, who asked whether any such drug as atropia or brandy could be given before the anæsthetic to support the heart's action, and render it more safe, Dr. Joseph Coats thought it very likely that atropia would prevent the *sudden* fall of pressure, but not the serious *gradual* depression, for the latter occurred also after the vagus was cut.

The *President* was much impressed last year, when in Paris, at the method of giving chloroform. A child was put on the table, and a towel folded thick was taken, and about ʒss of chloroform put on it, and the towel was put on its face and held close down on it. The child went on struggling for a time, until, when it seemed as if it were just going to die, it suddenly fell back, and on taking off the towel, it was found quite under the anæsthetic, and it remained under without any more chloroform. It would seem that this was not really putting it under chloroform, but rather that it was a state of approaching suffocation.

Dr. Newman, in reference to the death from ethidene mentioned by Dr. Kirk, said that it occurred with Mr. Clover, and that nitrous oxide was first given to the patient, and then ethidene. At the *post-mortem*, fatty degeneration of the heart was found. That was the only death recorded. While at Cambridge, he had taken every opportunity to get the private opinions of gentlemen present; a number from the north of England had stated that ether was much used there, partly because at inquests it was not found fault with so much, as the public believed that it was a much safer agent than

chloroform. One gentleman had been under the influence of all three, and said that ethidene and chloroform were very much alike, but he did not like ether so well, for the after taste was very disagreeable; but in future he would prefer the ether, for he believed it was safer.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1880–81.

MEETING III.—16TH DECEMBER, 1880.

DR. HECTOR C. CAMERON, *President, in the Chair.*

DR. M'CALL ANDERSON showed a PATIENT WHO HAD RECOVERED FROM ASCITES AFTER BEING TAPPED EIGHT TIMES. The case was that of a man, Patk. M., a labourer, aged 62. He was admitted to the Western Infirmary, 12th June, 1880, suffering from ascites. Although he had been rather intemperate, he had never suffered from stomach or bilious attacks. The ascites came on somewhat suddenly after exposure to wet and cold at a launch. Feeling ill at night he took a dose of opening medicine, but he did not sleep well, and in the morning complained of a diffused soreness over the abdomen. The swelling of the abdomen was at its height in three days; and on admission it was enormously distended. After tapping, the spleen was found to be much enlarged and the liver small (3 inches in nipple line), with the left lobe indurated with a fine sharp edge.

The treatment consisted in tapping, which was done eight times in all, in the course of about three months, over 300 oz. of fluid being removed each time; the total quantity 3,082 oz.

He had also milk, soup, and white flesh in moderate quantity. Hunyadi each morning to move his bowels freely. Tonics were also used, such as strychine and iron.

Since the last tapping, on 24th September, the fluid has not re-accumulated.

Dr. Anderson thought this to be a case of true cirrhosis, although no stomach symptoms presented at any time. Some might say it was spurious cirrhosis, due to pulmonary derangement (he had winter cough for two years, and was suffering considerably from bronchitis on admission); but the state of the lungs did not seem to warrant this conclusion,

and the œdema of the legs did not appear till after the ascites. He thought the suddeness of the ascitic attack looked like some sudden obstruction of the portal vein, and the cure resulted from the channels being again opened up.

DR. ANDERSON also showed a CASE OF ATHETOSIS. The boy, aged 14, had had an attack of right hemiplegia a month before admission to hospital (30th August, 1880). In the act of lifting a piece of bread from the table he was unable to grasp it, as the hand and arm at that moment became powerless. The leg was also involved so that it dragged; the articulation was defective, but there was no loss of consciousness. About the same time twitching movements were noticed in the right hand, and various movements executed involuntarily, such as alternate flexion and extension of the fingers, &c., the toes of the right foot occasionally moved in a similar way.

The treatment consisted of rest, regulation of bowels, friction of the parts with camphorated oil. He had certainly improved.

DR. DAVID FOULIS showed for Drs. Constantine and Aikman, of Guernsey, SOME CURIOUS VERMIFORM BODIES TAKEN DURING LIFE FROM THE BLADDER of an unmarried woman, aged 40, who for more than a year had been passing, per urethram, white elastic tubes from 2 to 3 inches long, and about ⅛ inch in diameter. She suffered from dysuria and retention of urine, and there had been some uterine derangement. Some of the vermiform objects had been taken by Dr. Constantine from the urethra, so that there was no doubt as to their having got into that part somehow or other. As many as 20 to 30 per week were said to be passed. They were tubes, and at each end there was a half twisted thin part, which was broken or torn at the extremity. In short, they corresponded exactly with those described by Lawrence (*Med. Chir. Transactions*, vol. ii), and by R. Owen (*Encyc. Anat. and Phys.*, Art. Entozoa, vol. ii), and quoted by Küchenmeister (*Manual of Parasites*, vol. i, p. 442). These authors were uncertain as to the exact nature of the tubes, but were inclined to call them worms, and this opinion appeared to be shared by Rayer and Brewser. Anton Schneider (*Müller's Archiv*, 1862, p. 275) called them the filaria of the fish; but this they evidently were not, as the size alone excluded that theory, and besides, the filaria is not a hollow tube. On microscopic sections being made, Dr. Foulis had no difficulty in determining the structure to be that of arteries, and with the internal, mammary, and radial arteries from man he easily made similar worm-like

bodies. Prof. J. Young confirmed this view, and suggested that the sham worms might have been introduced during sexual aberration by the patient. The case was interesting chiefly in relation to the other case described first by Lawrence, in which so many eminent observers had been involved. It would be well if sections were now made of the so-called worms from that case so as to decide whether they also were arteries. If so, it was instructive psychologically to note that the patient in that case continued the deception for thirty years.

DR. DAVID NEWMAN showed AN APPARATUS FOR ESTIMATING BLOOD AND URINE PIGMENTS IN SOLUTION.—When homogeneous white light is passed through a solution containing a small quantity of blood pigment (hæmoglobin), or of one of the pigments of urine (urobilin), the spectrum, instead of being continuous, is seen to be intersected by dark absorption bands. The presence of these bands afford a means not only of detecting the presence of hæmoglobin and urobilin, but also of estimating them quantitatively. Blood pigment exhibits a very characteristic absorption spectrum. Hæmoglobin, while in a very dilute solution, gives two absorption bands, one in the orange, and another in the green portion of the spectrum, between Frauenhofer's D and E lines. The one next D is narrower, blacker, and more sharply defined than the band close to E, and, on diluting the solution, it is the last to disappear. The former is still present when a solution containing 1 part of hæmoglobin in 22,000 parts of water is examined, the stratum being equal to two centimetres in thickness; while in so dilute a solution the band next E is no longer apparent. The point at which the band next E disappears having been determined, we have a means of estimating the percentage of blood colouring matter in the solution.

The instrument which I use for this purpose is somewhat similar to the hæmatoscope employed by Hermann. It consists of a brass tube about ten cm. long, and two cm. in diameter; one end is closed by a glass plate, and into the other extremity a sliding water-tight piston is introduced. This piston consists of a smaller brass tube, the inner end of which is also closed by a glass plate, while into the other end a small spectroscope is introduced. By passing the piston into the larger tube a cell is formed (by the walls of the outer tube and the two glass plates), the depth of which may be modified within certain limits by sliding the piston out and in, and the thickness of the enclosed stratum of fluid may be measured by means of a scale engraved upon the inner tube.

The fluid to be examined is passed into the cell through a hole in the outer tube close to the glass plate.

Suppose we wish to estimate the percentage of hæmoglobin in a solution; we know, to start with, that in a solution containing one part of hæmoglobin in 22,000 parts of water, we lose the absorption band next E when the stratum is two cm. thick. Now, if the solution be more concentrated, we cease to see the band next E with a thinner, and if it be less concentrated, with a deeper stratum, the depth of the layer being in an inverse ratio to the concentration of the solution; therefore, by a simple calculation, the quantity of hæmoglobin may be estimated. When the solution contains more than ·1 per cent of hæmoglobin, it is necessary to dilute it so as to make the observation more exact. The quantitative estimation of urine pigments may be accomplished in two ways by means of the same apparatus—(1) with, and (2) without the spectroscope. The results, however, are not absolute, as in the case of blood pigment, but only comparative —(1) the urine submitted for examination is first filtered, acidulated with hydrochloric acid, placed in the cell, and the piston drawn out till an absorption band appears in the spectrum close to Frauenhofer's F line (the urobilin band). The depth of the cell when this band makes its appearance is the index of the amount of urobilin in the solution; (2) in examining urine without the spectroscope, the urine should be carefully filtered, but no hydrochloric acid added, it is then placed in the cell, the spectroscope having been previously removed, and the piston drawn out until the stratum of urine has a colour similar to that of a piece of straw-coloured glass, which is fixed as a standard of comparison.

DR. ROBERTSON showed A BRAIN ILLUSTRATIVE OF CEREBRAL LOCALIZATION. It was that of a man, aged 23, who had been idiotic from birth, and was subject to severe epileptic fits every few weeks. He had also congenital right hemiplegia and aphasia. He could walk, though he dragged the right leg considerably. The right arm was greatly shrivelled and contracted, and was useless. The condition was ascribed to the use of the forceps at birth.

The entire brain was abnormally small. Besides, in the left hemisphere there was extreme wasting of the lower third of the ascending frontal and parietal convolutions, and of the backmost part of the second and third frontal convolutions; also of the upper temporo-sphenoidal convolution, and centre of the parietal lobe. In the right hemisphere there was similar wasting, but it was confined to the central and back

part of the parietal lobe, and upper part of occipital lobe. The left halves of the pons and medulla oblongata were about a-third smaller than those of the right side. The ganglia in the floor of the lateral ventricle were apparently normal.

Dr. Robertson remarked that the case gave both positive and negative support to the prevailing views respecting the localisation of motor function in the convolutions. For the right hemiplegia was associated with wasted *motor* convolutions in the left hemisphere, whereas, with similar wasting of *non-motor* convolutions in the right hemisphere, there was no palsy of the left arm or leg. Attention was also directed to the position of the lesion at the *base* of the motor convolutions, in relation to the greater implication of the arm than the leg, and to the affection of speech.

DR. ROBERTSON also showed SYPHILITIC THROMBOSIS OF INTERNAL CAROTID ARTERY.—The patient was a stout man, aged 42, who became hemiplegic several weeks after acquiring syphilis. At the time of his death the original chancre—a large indurated one on penis—was not healed, and there was a very copious secondary rash on skin. The autopsy did not reveal any morbid alteration in the chest or abdomen. In the head the internal carotid artery, just where it divides into the middle and anterior cerebral, was obstructed by a thrombus, and the wall of the vessel was thickened at the point. There was also some, though less, thickening at the corresponding part of the right internal carotid. The anterior and middle lobes of the left hemisphere were much softened.

Dr. Robertson remarked that the diseased condition of the vessel was probably due to the syphilitic poison. It was rare, however, to find such arterial change while the primary sore was still present, though it occurred occasionally with ordinary secondary symptoms.

MEETING IV.—12th JANUARY, 1881.

DR. HECTOR C. CAMERON, *President, in the Chair.*

DR. COATS showed THE LUNGS FROM A CASE OF FIBROID PHTHISIS; with cavities due to the dilatation of bronchi. In the upper lobes the tissue was hard and pigmented, the hardness arising from new formed connective tissue, which had completely destroyed the alveolar structure. The cavities present were lined with ciliated epithelium, showing that they

were dilated bronchi. Tubercles were present in the lower lobes.

DR. MACPHAIL showed THE INTESTINES FROM A MAN WHO HAD DIED OF AN INJURY TO THE ABDOMEN AND PELVIS. There was fracture of the pelvis, and hæmorrhage had taken place into the mesentery, the blood having apparently trickled up along the spine, and then run between the folds of the mesentery.

DR. NEWMAN showed AN ANEURISM OF THE AORTA which had ruptured into the trachea, the hæmorrhage being fatal. There had been no previous hæmorrhage, indeed, not even a streak of blood while under observation. He had been ill three years with what was thought to be some chronic pulmonary complaint, and died suddenly when up at stool.

DR. RENTON showed A HORN WHICH HE HAD REMOVED FROM THE UPPER EYELID.

DR. FREW showed A HALFPENNY WHICH REMAINED IN THE ŒSOPHAGUS OF A YOUNG CHILD FOR TWO YEARS.

The notes of the case are as follows :—J. D., a farmer's son, in March 1876, when just two years of age, while playing with a halfpenny·accidentally swallowed it. For a few minutes he seemed choking, and his parents were much alarmed, but after some slapping on the back performed by his mother, the halfpenny seemed to pass down, and the little fellow got relief. In the fright they had sent off for the usual medical attendant—a distance of a mile—but by the time he arrived the little fellow was sound asleep in bed. The doctor judging that the coin had passed into the stomach did not interfere. For some weeks afterwards various means were tried to make the halfpenny pass through the intestinal canal, but without avail. It was presumed impossible that it could have stuck in the œsophagus, so no search was made for it there. Meantime, the little fellow exhibited signs of having difficulty in swallowing solid food, so much so that he could not partake of it unless he had some liquid beside him to wash it over. Liquids alone he swallowed perfectly well. He had also frequent attacks of vomiting. These occurred especially just after meals and on going to bed, when he frequently had a fit of coughing, with vomiting of dark brown fluid. This state of matters continuing, and apparently getting rather worse, his parents naturally were becoming anxious. His father consulted me on the subject, and after hearing his statement I advised an examination of the œsophagus, and suggested the possibility of the halfpenny being lodged there. After a good deal of consideration and consultation of medical and non-medical gentlemen, it was

arranged that I should meet the regular medical attendant and endeavour to settle this point. This I did on the 27th Feb., 1878, nearly two years after the accident. A sponge probang was first passed down the œsophagus by my brother practitioner, and he thought it encountered some obstruction low down, but was not certain. This was not quite satisfactory, however, so I proceeded to pass a gum elastic œsophageal bougie (small size). I had succeeded in passing it a distance of 9 or 10 inches, when the little fellow began to struggle, and the parents insisted that I should desist. The bougie passed easily, and imagining that I must be in the stomach, I withdrew it. After withdrawing it and carefully observing the length of portion passed, I doubted very much in my own mind if I *had* entered the stomach. I afterwards wished to make another attempt and pass down an ivory-tipped bougie (as the nearest to a metallic one I could procure), but the parents would not allow of its being done. So far the evidence was negative, and we gave it as our opinion that the œsophagus was probably clear. No difference in the boy's symptoms was observed, and matters continued in the same condition till the month of August, 1878, when one evening, when seated on his father's knee, he was seized with an attack of vomiting. His father held his head forwards, and along with the first mouthful the clink of the coin was heard on the stone floor— two years and five months from date of swallowing. No blood, nor any sign of injury accompanied its expulsion. Since then, all symptoms of obstruction have vanished, and the boy is quite healthy. He still inclines to drink while eating, but probably this arises from habit, as at times he swallows solid food perfectly well.

I think there is no doubt that the halfpenny lodged during the whole of that time in the œsophagus and for the following reasons :—

1st. The child's symptoms pointed clearly to partial obstruction of the œsophagus, accompanied by irritability of the stomach ; and

2nd. The appearances presented by the halfpenny after its expulsion. It will be observed that two columns (as it were) of deposited material encrust the centre of the halfpenny— one on each side of the halfpenny—while at the two edges outside these columns the surface of the halfpenny is comparatively free from deposit—the date of the halfpenny being seen quite distinctly on one of the clean edges. It seems to have lodged vertically in the passage, and permitted the fluid or semifluid food to pass on either side into the stomach.

DR. HECTOR CAMERON showed A SMALL CALCULUS REMOVED FROM THE PERINEUM OF A BOY, AGED 3 YEARS, suffering from extravasation of urine. He had been ill about 6 weeks before admission with vomiting and pain in the belly. He recovered, but soon had a recurrence, and passed pus with his urine, and later on some pus was discharged by the rectum. Improved much after this till suddenly one day there was retention of urine. Soon the swelling appeared in the perineum, and ultimately it burst. Dr. Cameron examining the perineum found the small calculus, which had probably been the cause of the mischief. It was composed chiefly of uric acid.

DR. CAMERON also showed TWO SPECIMENS OF FOREIGN BODIES REMOVED FROM THE AIR PASSAGES.

The first case was that of a boy who was brought into his wards in the Glasgow Royal Infirmary in 1877. He was said to have swallowed a bean, and had had most acute suffering from cough and dyspnœa. This had passed off, and when brought into hospital he appeared quite well. On examination, however, Dr. Cameron found that the respiratory murmur was absent over the whole of the right lung, and as he thought that the bean was impacted in the right bronchus he called a consultation of his colleagues to see if any operative measures should be resorted to. Opinions conflicted and it was agreed to wait. That same night the boy jumped up suddenly in bed and began to cough, and was dead almost immediately. On *post-mortem* the bean was found sticking in the larynx.

The bean had probably been dislodged from the bronchus, and being cast up into the sensitive larynx determined death, partly by its size occluding the passage, and partly by spasm.

The next case was that of a girl, aged 7, who had swallowed a damson stone. There was at first a violent paroxysm of suffocation from which she recovered, and then appeared quite well. Still the child maintained that the stone was in the windpipe, and she had two attacks of bronchitis, for which she was treated in hospital and dismissed well. She had afterwards an attack of acute pneumonia of the left lung with high fever, and a somewhat paroxysmal cough. She passed safely through the acute illness, but during convalescence she had one day a very severe paroxysm of coughing, and after it said to her mother " the stone is loose again." She became subject to most distressing paroxysms of coughing, during which she felt the stone bobbing up and down in the trachea, and she soon learned to mitigate the cough by compressing the trachea high up so as to prevent the stone entering the larynx.

Dr. Cameron saw her in consultation nine weeks after the

stone had been swallowed and found her extremely emaciated, with much breathlessness and cough, and expectorating large quantities of pus and blood.

He opened the trachea—there was immediately a gust of coughing, during which the stone bobbed up into the wound and was secured. Her recovery is now virtually complete.

Dr. SAMSON GEMMELL said he had examined this patient's chest several times since the operation, and although on the earlier occasions he had found almost complete consolidation of the left lung and much congestion of the right, these conditions had gradually improved, and now nothing remained but a little consolidation at the left base behind. There was now no cough, she had recovered flesh, and the temperatures were strictly normal.

MEDICAL ITEMS.

Changes in the Thoracic Percussion Sound during Respiration. By Professor N. Friedreich (*Deutsches Arch. f. Klin. Med.*, xxvi, p. 24.)—In the production of the thoracic percussion sound both the chest wall and the lung are concerned, and in the case of the latter both the parenchyma and the contained air are thrown into vibration. Though the chest wall is thus not the sole source of the sound, yet, in virtue of its flexibility, elasticity, thickness, and architectural form, it exercises much the most important influence on the quality of the sound; it modifies the shock of percussion in communicating it to the lung tissue, and either facilitates or hinders the transmission of the returning sound waves to the ear of the examiner. As regards the lung, the principal conditions which affect the percussion sound are the degree of tension of the parenchyma and the quantity of air contained in the alveoli. All these factors undergo rapid modification during the different phases of respiration, and thus give rise to corresponding changes in the percussion sound; it must nevertheless be borne in mind that some of these modifications operate against each other, when the nature of the resulting change in the sound will depend on the predominance of the one or the other.

The changes in the percussion sound may be classified as

inspiratory and expiratory; the former may be progressive or regressive, the latter are invariably regressive.

In quiet respiration no difference is, as a rule, observable in the intensity or quality of the percussion sound. Deep inspiration, on the other hand, raises the pitch and diminishes the duration and intensity of the percussion note, giving rise thus to relative dulness; this is an instance of regressive inspiratory change in the percussion sound. In a very young person, with a flexible chest wall, these differences are often very striking; they are more obvious in the intercostal spaces than over the ribs, and are most marked of all at those parts of the thorax which move most freely in respiration, and which give a very loud and full sound when breathing is quiet. This change is to be explained on the ground that the inspiratory increase of tension in the thoracic parietes and lung parenchyma more than compensates for the augmentation of the air contents of the lung. Occasionally a double inspiratory change is observable, that is, at the end of a forced inspiration the sound increases somewhat in intensity and fulness, though it never becomes so full as at the beginning of inspiration.

The progressive inspiratory changes in the percussion note are detected chiefly at the borders of the lungs, where they approach the hepatic and cardiac regions; during inspiration the percussion sound here becomes louder and deeper in pitch. Between the areas of progressive and regressive sound changes lies a space—a neutral zone in which inspiratory changes are never observed. This corresponds anteriorly to the fourth, laterally to the sixth, and posteriorly to the seventh intercostal space; so that it encircles the thorax horizontally. In the neighbourhood of the heart, a similar neutral zone may be demonstrated, 1·5 to 2 ctm. in breadth.

Complete expiration makes very little change in the percussion sound in the area described—that of inspiratory sound change. It is only in the neutral zone that differences are observable, the percussion note becoming higher in pitch, but less loud and full.

In pathological conditions, the respiratory changes in the percussion sound undergo certain modifications of some value from a diagnostic point of view. (1.) In slight *vesicular emphysema* the inspiratory changes are less marked, and in severe cases they are wanting. (2.) In *croupous pneumonia* of the lower lobes, the sound changes are absent over the hepatised portions of lung; when the upper lobe is affected, the tracheal resonance of Williams, which is associated with this condition, becomes higher in pitch on deep inspiration,

from dilatation of the rima glottidis. (3.) In *pneumothorax*, inspiration increases the tension of the chest wall, and renders the percussion sound higher in pitch and shorter in duration. (4.) Over *pulmonary cavities* with very thin and distensible walls the percussion sound becomes higher in pitch in inspiration, shorter, and less tympanitic. Even over cavities with thick and infiltrated parietes, the sound rises in pitch during inspiration. (5.) In cases of *multiple partial condensation*, the regressive inspiratory sound change is detected. (6.) In *asthma*, the respiratory sound changes are even more obvious than in health.—*Cbl. f. d. Med. Wiss.* 11th December, 1880.

Experimental Researches on the Nature of Diphtheria.—Drs. H. C. Wood and Henry F. Formad have, under the authority of the National Board of Health, made a series of experiments with a view to determine whether it is possible to produce diphtheria in the lower animals by the inoculation of the exudation from diseased human subjects. Their experiments go to show that in the trachea the formation of a pseudo-membrane is not the result of any peculiar or specific process, but simply of an intense inflammation, which may be produced by any irritant of sufficient power. After a general view of the facts elicited, the deduction is made without committal to any theory, that " the contagious material of diphtheria is really of the nature of a septic poison, which is also locally very irritant to the mucous membrane; so that when brought in contact with the mucous membrane of the mouth and nose, it produces an intense inflammation without absorption by a local action. Whilst absorption is not necessary for the production of the angina, it is very possible that the poison may act locally after absorption, by being carried in the blood to the mucous membrane. Further, under this theory it is possible that the poison of diphtheria may cause an angina which shall remain a purely local disorder, no absorption occurring; or a simple local trachitis produced by exposure to cold, or some other non-specific cause may produce the septic material when absorption shall cause blood-poisoning, the case ending as one of adynamic diphtheria."—*St. Louis Courier of Medicine.* November, 1880. —G. S. M.

Ergotine Hypodermically in Paralysis of Sphincter Ani.—Dr. Larger records the case of a lady whose confinement was followed by complete paralysis of the sphincter of the anus, due probably to the pressure of the child's head, the

labour having been slow, and the presentation occipito-posterior. At the end of five months the paralysis was still complete. Rectal and anal douches of cold water were prescribed, with suppositories of ergotine, but no improvement was apparent. Dr. Larger then began the subcutaneous injection of ergotine, a syringeful being introduced every second day, close to the margin of the anus. Considerable improvement followed even the first injection, and after the fifth injection the cure was perfect. Some time afterwards the same patient suffered from pleuritic effusion, and notwithstanding the fact that she was treated with drastic purgatives, there was not the slightest return of the paralysis of the sphincter ani. The author recommends specially *Bonjean's* ergotine as the best for this purpose, as it is prepared in such a way that an extract of uniform strength is obtained from a given quantity of ergot; the *quantity* of extract obtained by this process is apt to vary, but its *composition* is constant. By most other methods of extraction, an ergotine is produced which is sometimes twice or even three times as strong as at other times. The solution employed for injection was one of 10 per cent strength, made with distilled cherry-laurel water. A syringeful was used each time, that is to say, a gramme of the solution, or a decigramme of the ergotine. Neither pain nor abscess followed the injections, a circumstance which Dr. Larger ascribes to the particular method he adopted—the injection of the syringeful of solution in three portions, at three different points round the margin of the anus.—*Bull. Gén. de Thérap.* 30th October. 1880.

Some Practical Points in Digestion.—Dr. J. Milner Fothergill has an interesting paper, with the above title, in the *Practitioner*, January, 1881. The following are some of the "points" he makes. It is well known that starch is converted into sugar by diastase, a ferment present in the saliva; an identical ferment, known as "maltine" or "malt extract," is now largely used for ill-nourished infants and invalids, but, as a rule, it is given in such a way that little benefit is obtained from it. As this diastase is inert in the presence of an acid, it must not be taken *after* a meal, as usually directed, as it then falls to the level of other food, is no longer a digester, but must itself be digested; it should rather be mixed with the food a minute or two before it is placed on the table.—When milk coagulates too firmly in the stomach, forming a hard curd which resists the solvent action of the gastric juice, and can be seen in the stools, the digested milk or milk gruel of Dr. Roberts may be used; or equal

quantities of milk and lime water may be given, with a tea-spoonful of baked flour mixed with each pint, when the curd will be mechanically rendered less firm and tenacious ; if the acidity be very marked, 10 grains of prepared chalk, or 5 grains of carbonate of magnesia, may be put in along with the flour.—With reference to the digestion of fat, Dr. Fothergill suggests that the albuminoid envelope of connective tissue must be removed before this can take place. The absence of this envelope accounts for the ready digestibility of cod liver oil, cream, butter, and the liquid portion of fried bacon ; while its presence explains the greater difficulty experienced in digesting the fat of meat. We possess but one agent which we know definitely stimulates the pancreas—namely, sulphuric ether ; it is in this way that it facilitates the assimilation of cod liver oil.

Treatment of Ectropion by Wolfe's Method.—In the *Annals of Medicine and Surgery*, for January, 1881, Drs. Mathewson and Pilcher record two cases in which ectropion was successfully treated by Wolfe's method. In the first case the graft of skin was taken from the side of the chest, and kept in position by means of two superficial stitches, the everted lid having been freed from its adhesions and turned down. The whole was covered with a thin transparent plaster make of goldbeater's skin ; over this was laid a thin piece of muslin, soaked in vaseline ; then some absorbent cotton and a flannel bandage. Whisky was given to increase the activity of the circulation. When the dressing was removed for the first time (on the fourth day), it was found that union by first intention had taken place along nearly the whole extent of the graft. For some time the tissues were swollen and thickened, but they subsequently shrank considerably, permitting free opening of the eye. In the second case the result was nearly as good, though success was at first rendered doubtful by a severe attack of erysipelas.

Fatal Burns in Advanced Pregnancy. The Burns of the Mother Apparently Impressing themselves on the Child in Utero.—This case, reported by Dr. William Hunt, is destined to become classical. A woman, eight and one-half months in pregnancy, received fatal burns from her clothes taking fire, a large part of her body being involved. The fœtal heart sounds were distinctly heard when the patient was admitted to the hospital, but they ceased during the night, and the next afternoon a well-formed still-born female child

was delivered, healthy, with the exception that its body had the appearance of being recently burned, the epidermis being raised in blisters. Upon comparison, it was found that this appearance of the fœtus corresponded exactly with the mother's burns. Illustrations of the burns of mother and child are furnished, which demonstrate a real resemblance. The bearing of this case upon the question of maternal impressions in the later months of pregnancy is very obvious.—*American Journal of the Medical Sciences* for January, 1881.

Ocular Symptoms in Different Diseases.—Dr. Gorecki has tabulated his views as follows :—

Blepharoptosis, or the falling of the upper eyelid, indicates paralysis, complete or incomplete, of the third pair.

Lagophthalmos, or inability to close completely the palpebral fissure, is a sign of facial hemiplegia, idiopathic or a symptom of cerebral disease.

Strabismus occurring suddenly, and accompanied by diplopia, is most frequently the result of some cerebral affection.

Xanthelasma (a yellow lamina sometimes met with in the skin) of the eyelids occurs in certain alterations of the liver.

Sub-conjunctival ecchymoses are frequent in hooping-cough, and may sometimes, at the beginning of the complaint, clear up a difficult diagnosis.

Redness of the conjunctiva, watering of the eye, &c., indicate in the child the outbreak of some eruptive fever, particularly measles. The prognosis is favourable if the tears come when the child cries, but fatal if the secretion of the tears is arrested.

Spots on the cornea are often the indication of a strumous constitution.

Dilatation of the pupil or mydriasis indicates excessive fatigue, the existence of intestinal worms, meningitis in the second stage, or a true amaurosis. The dilatation is most frequently connected with atrophy of the optic nerve. It is seen also during an attack of epilepsy, on coming out of chloroform, after belladonna poisoning, &c.

Unequal dilatation of the two pupils points to the onset of general progressive paralysis.

Contraction of the pupil is one of the early symptoms of *tabes dorsalis.* It is met with also at the beginning of meningitis, in opium poisoning, and in the first stage of chloral poisoning.

Deformation of the pupil, particularly after the injection of atropine, indicates an old iritis, in nine cases out of ten, of

syphilitic origin, if not depending on some disease of the neighbouring parts.

Cataract in subjects under say forty or fifty, is frequently of diabetic origin, and constitutes soft cataract.

Finally, the ophthalmoscope enables us to recognise the retinitis of albuminuria in Bright's disease, of simple polyuria, and sometimes in the case of women during pregnancy. Retinal hæmorrhages, œdema of the retina, and embolism of its central artery, are sometimes met with in organic affections of the heart. Optic neuritis and perineuritis and atrophy of the disc are symptoms of syphilis, or of tumours in the neighbourhood of the cerebellum or the *corpora quadrigemina.* —(*Le Praticien*). *Gazette des Hôpitaux.* 15th January, 1881.—J. W. A.

Treatment of Graves' Disease by Duboisin hypodermically.—Influenced by the analogy which exists between the properties of atropine and those of duboisia, and by the fact that the former drug had been used in the treatment of Graves' disease, Dr. Desnos has tried duboisia in several cases of that affection, and here records the results (*Bull. Gén. de Thérap.*, 30th January, 1881). Besides acting on the eye in much the same way as atropine, duboisia diminishes the excito-motor power of the nervous system, it accelerates the action of the heart, and diminishes the secretion of sweat and saliva. Half a milligramme of the neutral sulphate of duboisia was injected daily, or every two days. The general result was a certain degree of improvement, especially at first; the conjunctival redness diminishes, palpitation, dyspnœa, and pre-cordial oppression were much relieved, the goître ceased to throb, and the general health seemed re-established. Soon, however, a relapse took place, and this was observed in every case. Duboisia, therefore, though of considerable value, is simply a palliative, and produces only temporary improvement.

Extirpation of Rectum without Destroying the Sphincter Ani.—Dr. W. A. Byrd advocates this operation in cancer of the rectum. He first thoroughly dilates the rectum till the sphincter's muscular fibres give way, when the bowel can be turned down and rolled back like the cuff of a coat sleeve. This usually brings most of the cancerous mass external to the body. It sometimes happens that, during dilatation, the morbid mass splits longitudinally nearly, if not quite, down to the underlying connective tissue; following

this fissure the growth may be removed with the galvano-caustic wire or the thermo-cautery. After the operation a roller bandage, made of cheese cloth, soaked in glycerine, and wrapped round a rubber catheter, should be passed well up the bowel; this should be removed in about twelve hours, when danger of hæmorrhage will usually have passed. Two cases, illustrating the advantages of this method, are here reported.—*Med. and Surg. Reporter.* 11th December, 1880.

Application for the Chronic Pains of Subacute Gout and Rheumatism.—Dr. Lenoble, of Esternay, uses the following application in subacute gout and in rheumatism, and recommends it also in neuralgia, recent or of old standing, when the first days of the acute attack have passed. Finely powdered gamboge, myrrh, canella, salicylate of soda, equal parts of each, to be mixed with a sufficiency of essence of turpentine to bring the whole to a fluid consistency. Three applications should be made daily, the parts being briskly rubbed, and afterwards covered with cotton wadding.—(*Bouchut's Compend. de Thérap.* 1880.) *The Practitioner.* December, 1880.

Treatment of Thrush.—M. Damaschino recommends oxygenated water for this purpose, in *La France Médicale,* 1st January, 1881. It has the advantage of leaving no disagreeable taste behind it, producing in the mouth a pleasant sensation of freshness or coolness. The application should be repeated three or four times in the 24 hours. While this serves perfectly as a local remedy, the causes which gave rise to the growth of the fungus must be combated, such as general debility, acidity of the secretions of the mouth, &c.

Dr. Tordeus prefers benzoate of soda as a remedy for this disease. (*Journ. de Med. et de Chirurg. de Bruxelles;* p. 450, 1880). He envelops the forefinger in a piece of linen dipped in a solution of the salt (3 parts to 25 parts of water), and with it rubs the whole of the mucous lining of the mouth, so as to detach most of the parasitic growth. This little operation may be repeated next day if necessary. After thoroughly rubbing in this way, the same solution should be painted on the tongue and the whole interior of the mouth every two hours.—*Bull. Gén. de Thérap.* 30th January, 1881.

Quinine for Hypodermic Use.—Professor Whittaker, of Cincinnati, discussing the relative values of the various preparations of quinine for hypodermic use, mentions the insolubility

of quinine (alkaloid); the irritating character of solutions of
the sulphate, secured by means of alcohol or acids, and quotes
Eulenburg's statement that the bisulphate of quinine, dissolved
in glycerine, will keep for four months. With the aid of heat,
three parts of glycerine will take up one part of the salt, thus
permitting 10 to 15 grains to be administered with each
syringeful.

Muriate of quinine is relatively richer in quinine than the
sulphate, is more soluble, more quickly absorbed, and less
liable to decomposition, but is also more expensive.

The ferro-citrate, bitartrate, lactate, and other salts have
been used, but contain relatively less quinine.

The hydrobromate or neutral bromide is the best for this
purpose. Though less soluble than the bisulphate, it is richer
in alkaloid, and dissolves, with heat, in 15 parts of water, or
in 4 parts of glycerine. It should be used as follows:—Into a
test-tube put twenty grains of bromide of quinine and two
drachms of water, and cork the tube. In order to use it, heat
the tube (without smoking it) over a flame, and in two or
three minutes solution of the crystals will have taken place.
Pour a quantity into a teaspoon that has previously been
warmed, and from thence it may be drawn into the syringe
(also warmed), and immediately injected under the skin. The
usual half-drachm syringe will contain the equivalent of five
grains of the salt.—*New Remedies.* January, 1881.

**The Systematic Use of Antiseptics in Midwifery
Practice.**—Dr. Halliday Croom calls attention to the rather
startling fact that the number of maternal deaths in the New
Maternity Hospital, Edinburgh, since it was opened in May,
1879, has been 12 out of 320 women delivered, or 1 in 26·6;
and 10 of the 12 deaths were from metria or puerperal fever.
Led naturally to think of some remedy, he believes that the
employment of antiseptic precautions is the only one likely to
be of much service. He does not consider that absolute
asepticism is attainable, but by a strict adherence to certain
rules which he has given, and which are evidently the result
of much thought and care, he considers that " we shall very
materially diminish its frequency (puerperal septicæmia), cer-
tainly prevent anything like an epidemic, and render its
presence a rarity in our hospital, where hitherto it has been
a scourge. For the rules themselves we must refer our
readers to the paper, which appears in *The Edinburgh Medical
Journal,* February, 1881.

DISCUSSION ON THE PATHOLOGY OF PHTHISIS PULMONALIS.*

ON A CASE OF PHTHISIS AB HÆMOPTOE.

By W. T. GAIRDNER, M.D.

ANY one who has followed the course of recent researches on tubercular disease, especially those which have got importance and celebrity in Germany from the great name of Virchow, must be aware that many new questions have been raised; and among these are the relations of tubercle to inflammatory processes, which, according to Laennec's views, are secondary to the tubercle, but which some of the Germans are teaching us are primary. That is a very large question, and it is not necessary that it should be entered on at present; but every one who is familiar with the able lectures of Niemeyer on phthisis is aware that he presents this subject in a light to which most of us find it rather difficult to accommodate all our clinical and practical opinions; and in particular, he utterly denies the tubercular nature of a great many of the processes concerned in phthisis pulmonalis; further, he presents the relation of the inflammatory processes in the lung to tubercle in quite an inverted manner to that which Laennec's views involved, and makes it a particular

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* This discussion was held in the PATHOLOGICAL AND CLINICAL SOCIETY OF GLASGOW, on the evenings of February 8th and 25th, and March 8th. On the first of these evenings Dr. Gairdner and Dr. Joseph Coats read the papers which follow.

point of his doctrine to support the suggestion implied in the phrase—"Phthisis ab Hæmoptoe" (which was also a very ancient view of the origin of consumption), that the bleeding is the first step and the consumption the second. He tries to bring it into accord with Virchow's views, and thinks that the blood, being poured out into the bronchial tubes, is sucked back into the alveoli of the lungs, or is extravasated directly into the alveoli, and being there caseates, and in this process of caseation gives rise to products which infect the system, and thus originate miliary tuberculosis, which, according to him, is the only true tuberculosis. Now, the pathology of Laennec was precisely the opposite—that the tubercles were there, or at any rate the tubercular tendency was there, and that the blood-vessels of the lung bled as a result of it; thus the hæmoptysis was the result of the tubercular tendency, and therefore took place at various stages of the progress of the disease, and thus the bleeding was usually, if not always, a secondary change, arising from previous tissue changes in the lung or its blood-vessels.

The seeming discordance of these two views gives to every case of apparent "Phthisis ab Hæmoptoe" great interest at present; and though it cannot be presumed that any one case will settle the question, yet the case now before the Society may be considered as presenting some features which were worthy of attention.

The peculiarity of the case is that in a young man two separate considerable hæmorrhages occurred at intervals, with so little disturbance to the system that, but for the alarming character of the hæmorrhages themselves, he would not have been in the Hospital, and would not have taken any medical measures whatever. Of course, only a brief account of the case, which is reported very fully in the *Journals* of the Ward, can be here given.

Patient was a boy of 17, a rivet heater; admitted into the Western Infirmary on 24th Sept., 1877, with no characteristic physiognomy, unless it was a tendency to a florid, or slightly livid complexion, which rather gave one the impression of heart disease than of tubercle, and, in fact, a doubt was entertained as to whether the hæmoptysis was due to the heart or lungs. There had been a hæmoptysis immediately before admission, of uncertain but of considerable amount, and it was found that there had been a preceding hæmoptysis some time before of still greater amount, but which had only temporarily interrupted him in his occupation. The symptoms were almost

nil after the blood had come up; it could even be said that, but for the distinct instructions of the physician, he would not have been in bed. He had no sense of pain or difficulty in breathing; he had absolutely nothing to complain of. But while there was this entire absence of palpable symptoms, there was an extensively diffused crepitant râle on the left side of the chest, chiefly over the lower part, which left no doubt that the hæmoptysis was connected with it. There was also a reduplication of the second sound of the heart over the pulmonary artery, which led either to the inference that there was cardiac disease, or pulmonary disease leading to obstruction of the circulation through the lungs. These signs were singularly persistent; the crepitant râle, loud and distinct over the lower lobe, continued for weeks, during all which time the lad hardly suffered from a single symptom that was worthy of the name. His temperatures also, probably the most delicate physical test of a state in any way allied either to inflammation or tuberculosis, showed singularly little disturbance. They were at first taken only twice a day, and from 25th September to 1st November they rose on one occasion to 101° F., and on one other to 100° F., but with these two exceptions they were almost absolutely normal throughout those three weeks following the hæmorrhage. At a later period they began to show slight oscillation, and on 3rd December a sudden and exceptional rise took place to 102·2° F., and for weeks after that the temperatures were little if at all in excess of the normal, up to the beginning of January; so that for three months of the most careful recording, there were only the most rare exceptions to the general statement as to the temperature being mostly within normal limits. The pulse and respiration were also almost perfectly quiescent. During this time, after the first alarm of the bleeding had been got over, the lad was out of bed, going about the ward, assisting in the work, and making himself useful, and only kept in hospital because it was thought desirable to watch him; the examination of his chest was thus rather thrown into the background. After he had been six weeks in the house a new examination was made. Here it should be stated that on his first admission he was carefully examined every day, and the upper lobe of the lung was adjudged to be perfectly sound, the respiratory murmur over it being even puerile, while the lower lobe presented the crepitus above mentioned, and also dulness on percussion. I must say, therefore, that considerable surprise was

felt on coming back to the physical examination some weeks afterwards, on discovering the metallic sounds characteristic of a considerable excavation over the upper lobe, where immediately after the hæmoptysis the respiratory murmur had been abundant and the percussion good. There was no reasonable doubt of these facts; so that it was perfectly clear to me, that while this lad was walking about the ward with pulse, temperature, and respiration normal, with scarcely any appreciable expectoration, and no pain, a cavity had developed, of size sufficient to produce the most marked physical signs, in the upper part of the lung. Briefly, the rest of the case may be said to be as follows: from this time, by exceedingly slow stages, the patient still making no complaint, hardly a patient at all, going home and coming back again, for he was three times in the Infirmary, the disease gravitated into a case of very chronic ordinary phthisis, and came to be undistinguishable in character from an average case of very slowly developed tuberculosis; and ultimately the lad died.

At the *post-mortem* examination the left lung was found firmly adherent, and an enormous cavity was found in the upper lobe, into which several large bronchial tubes opened; the tissue was condensed throughout in the lower lobe with smaller cavities. The right lung was free from adhesions, and there was no considerable condensation, much less any cavities, but it was dotted over with frequent dark nodules, which the microscope showed to be undoubted miliary tubercles. Miliary tubercles were also found, though not very abundantly, in the liver and spleen. It was certainly a case where one would have been strongly inclined to doubt the tubercular nature of the disease, as observed without the microscope, for it had a good many of the characters of cirrhosis of the lung, but from the microscopic sections from the right lung, some of which are shown by Dr. Coats to-night, there was no doubt as to its tubercular nature. This lung was very adherent. In the right lung there was an entire absence of adhesions.

The tubercular character of the disease ultimately is thus clearly established, and the question is, With what pathology of tubercle does this case best agree? It seems to be one of the cases that comes nearest to the general doctrine of Virchow, the doctrine of a secondary tuberculosis, of a "phthisis ab hæmoptoe," as expounded by Niemeyer; but if it is to be accepted as such, it differs from Niemeyer's description in details, especially as regards the inflammatory changes and symptoms usually following a hæmoptysis. He says, the

blood being in the parenchyma of the lungs or in the alveoli leads first to an inflammation; and that he has often witnessed a development of high fever and pain, with symptoms of inflammation, after such a bleeding as we had in this case. In the patient whose lung is now before us, it would perhaps be too much to say that the bleeding took place without any inflammation; but this at least may be safely said, that whether the tubercular tendency preceded or followed the hæmoptysis, it seems to have come on without anything of the characters of the inflammation as gauged by the symptoms.

It may here be suggested that cases of hæmoptysis like this one are not the only cases in which it is known that blood is poured out into the lung; and it always appeared to me a difficult point to meet, on the modern theory of hæmoptysis giving rise to tubercle, that cases are very numerous where hæmoptysis and also hæmorrhagic condensations take place, but where it is very rare for tubercles to follow. Hæmoptysis as the result of mitral disease, "apoplexy of the lung" as Laennec called it, is the very type of a case where one would expect, on this theory, the blood stagnating in the air cells of the lung to caseate, and thus give rise to secondary or miliary tubercles; and yet it is very rare to find mitral disease associated with tubercular disease. Then, again, hæmorrhage often occurs into other organs or parts in which tubercle never follows, as in bruises, in scurvy, in embolism, even pulmonary embolisms, &c., or in hæmorrhage into the brain, where the rupture of a blood-vessel and the formation and organisation of a blood-clot is often survived for many years, and where caseation hardly ever does result as a consequence, and tubercle is still more rare. Certainly neither inflammation in the ordinary sense of the word, *e. g.*, abscess, nor caseation, nor tubercular meningitis, nor general miliary tuberculosis, can be said to be at all a common result of an old apoplectic clot becoming encysted; and yet, on the theory that extravasated blood *per se* is apt to caseate and give rise to tubercular disease, one would expect tubercle in one form or another to be among the well known and familiar pathological incidents of cases where an apoplectic clot has remained for years, has undergone gradual fatty degeneration, and has by slow degrees become to a great extent removed. So also it is not rare, though not, perhaps, so common, as in the case of the brain, to find hæmorrhagic condensation in the lungs, from cardiac disease or embolism, undergoing a great variety of chronic changes, more or less allied to inflammation, and even to ulcer-

ation and gangrene; but caseation in such cases is almost unknown, and tubercles, whether primary or secondary, are extremely rare, more rare perhaps. than in any other kind of death from chronic disease in any organ.

ON PHTHISIS PULMONALIS, ESPECIALLY ITS RELATION TO TUBERCULOSIS.

By JOSEPH COATS, M.D.

In approaching the study of phthisis pulmonalis we have two things to consider, in the first place the exact nature of the anatomical changes, and in the second place what may be called the proper pathology of the disease. At the very outset of the inquiry we are met with the question, Is phthisis pulmonalis a tubercular disease? and this leads to the further questions, What are the characteristics of tubercular disease? How are we to recognise tuberculosis?

In order to answer these questions, we must take, to begin with, undoubted cases of tubercular disease, and endeavour from them to find what are the essentials in their pathology. For this purpose we shall take, in the first place, acute general tuberculosis, and afterwards an undoubted case of local tuberculosis, and endeavour by the comparison of these two to determine the essential features of tuberculosis.

The General Pathology of Tuberculosis.

In acute miliary tuberculosis we have a disease running its course in a few weeks with high fever, and leading to a fatal issue apparently in very much the' same way as a case of typhoid fever, either uncomplicated or complicated only with pulmonary catarrh. According to my experience, in a large proportion of cases this disease is mistaken for typhoid fever during life. On examining the body a condition is found which can, I think, be fairly designated an eruption. Myriads of little grey bodies are found in the most diverse organs—in the lungs, kidneys, liver, spleen, sometimes in the muscular tissue of the heart, in the membranes of the brain, and elsewhere. An eruption has occurred, apparently simultaneously, of what in the meantime we may designate miliary tubercles, in all these organs. The eruption is perfectly symmetrical,

both lungs, both kidneys, both halves of the membranes of the brain, &c., are equally affected. In the individual organ also the tubercles are planted uniformly in every region of it. In the lung, for instance, there is no localization at the apex or elsewhere, but from apex to base there is a homogeneous distribution of the nodules. So is it in the liver; the tubercles here are mostly too small to be visible to the naked eye, but making a microscopic section of any part of the organ one is certain to meet with them.

Now a lesion which has thus a symmetrical distribution, which occurs simultaneously in a great variety of organs, and which presents all the characters of an eruption, must be due to the presence of some poisonous agent in the blood. This is confirmed by the clinical characters of the disease, which are not entirely referrible to the local conditions. In a recent debate on syphilis in the Pathological Society of London, Jonathan Hutchinson insisted on the view that a symmetrical disease is a blood disease, and adduced the authority of Paget and Budd in support of this view. In the present case it seems impossible to escape the conclusion that there is some virus carried by the blood to these various organs and producing the lesions there.

It may be important here to refer to the histological characters of this lesion, the miliary tubercle. The structure is virtually identical in all situations. In the case of the lung, for instance, as appears in the sections which I have placed under the microscopes, the tubercles are seen as rounded solid tumours in the midst of perfectly vesicular tissue. So in the liver there are rounded bodies appearing in the midst of the hepatic tissue. The tubercles are situated in the connective tissue of the organs. In their finer structure they present giant cells in their central parts, and these giant cells contain multitudinous nuclei, largely distributed towards their margin. At their peripheral parts the giant cells present processes which form a reticulum, in the meshes of which are smaller cells, some of them epithelioid in size and appearance, some of them with the ordinary characters of small round cells. These characters are often obscure in their finer details on account of degenerations and the complications about to be referred to.

While these small round tumours, the true tubercles, are present in the various organs mentioned, they are not the only pathological condition. It is important to observe that in almost every case there are evidences of concomitant inflammation. In the case of the lung the inflammation manifests itself in the form of a catarrhal exudation in the air vesicles,

and also by an inflammatory infiltration of the connective tissue of the lung. Around each tubercle there is commonly an inflammatory zone, and the tubercle as seen by the naked eye includes inflammatory products along with the true tubercular growth. In the case of the pia mater the inflammatory manifestations are highly developed, and the tubercles are so concealed by the inflammatory exudation as to be usually rather difficult of detection by an inexperienced person. An important question comes up here as to the relation of the inflammation to the tubercles. Is the inflammation produced by and secondary to the tubercles, or are they both due to the same poisonous agent? This question will come up afterwards and need not be fully dealt with here.

Turning now to a case of local tuberculosis, we have to consider what the exact pathological processes are in an undoubted case of this kind. Local tuberculosis of the kidney, sometimes called phthisis renalis, affords a good example. In this disease there is, let us say, first in a single calex, a tuberculosis of the apex of one of the pyramids of the kidney, that is to say, tubercles are formed in this situation. These tubercles, of essentially the same structure as those in acute miliary tuberculosis, have a tendency like most tubercles to undergo caseous metamorphosis. Caseous metamorphosis means death or necrosis of structures, and here as the caseous material is at the surface, it is carried away and an irregular ulcer forms. This ulceration increases by a repetition of the same process. Tubercles are formed in successive crops outside the ulcer in the neighbouring kidney tissue, and the ulceration spreads by the successive disintegration of the tubercles and tissue involved. But this disease advances not only in this direction. It progresses down the ureter, causing ulceration of its mucous membrane, the caseous material sometimes forming a continuous layer on the surface of the prolonged ulcer. In this way the entire ureter may be converted into an ulcerated tube with a caseous lining. The bladder is also affected, and we have again ulcers produced by the formation of tubercles in the mucous membrane, and extending by the formation of successive tubercles peripherally, and their disintegration. The formation of tubercular ulcers may extend to the other ureter, but the process apparently finds some difficulty in ascending against the current of the urine, but it may spread to the vesiculæ seminales and vasa defferentia.

Now in such a case as this we have a local disease presenting characters exactly parallel to what we find in acute general tuberculosis. We have here a virus not conveyed by the

blood, but carried, on the one hand, inward, possibly by the lymphatics, and on the other hand, along a surface, and producing as its result the formation of these minute bodies, virtually identical with the miliary tubercles of the other disease. It is true that here the tubercles are variously altered; they are in different stages of caseation and disintegration, and not in the fresh and nearly uniform condition of those which are virtually of simultaneous production. Yet they are the same rounded bodies with the giant cells in their central parts and smaller cells peripherally, and it need hardly be said that even in acute miliary tuberculosis a caseous necrosis is always more or less present.

Here, again, the tubercles are accompanied by inflammatory manifestations. In such a ureter as that I am referring to—and I have had in my mind a particular case, from which I show you a piece of the ureter—there is great inflammatory thickening, and the tubercles are in great part buried in the midst of inflammatory cells, so that their boundaries are obscured, and they are mainly recognisable by their giant cells.

It may here be remarked that the tubercles themselves, in their structure, present analogies to inflammatory products. In inflammation we have round cells like those of the periphery; we have larger epithelioid cells in granulation tissue, and even the presence of giant cells is not unknown in granulations. Tubercles present analogies to inflammatory products in another respect. It is well known that inflammatory new-formations tend to form connective tissue; the natural termination of the granulating wound is the cicatrix, a connective tissue structure. As we have already seen, tubercles frequently have a tendency to undergo caseous metamorphosis, but in the lungs they often become converted into solid fibrous bodies, forming a dense non-vascular glistening connective tissue. Although in some respects analogous to inflammatory structures, tubercles are not to be regarded as simply inflammatory, any more than syphilitic gummata are to be considered inflammatory, although presenting at least as much analogy in structure to inflammatory products.

It need hardly be added that the same question arises here as in the former case in regard to the exact relations of the inflammation. We can only say in the meantime that the formation of tubercles and the inflammatory new-formation are again concomitant.

So far, then, it is apparent that in a typical case of local tuberculosis we have an "infective" disease. I have long been

in the habit of using this word as equivalent to the German word "infectiv," and as bearing a distinctly different meaning to infectious; and I was glad to notice a few years ago that Dr. Burdon Sanderson has arrived at a similar use of the word infective. An infective process is one in which lesions are to be traced to the direct action of a virulent agent, whether that agent is introduced from without or formed inside the body. Acute miliary tuberculosis is an infective disease because each miliary tubercle owes its origin to the action of an infective particle. And so local tuberculosis is infective, because we have again evidence of some infective material acting directly on structures, and producing the particular form of lesion called a tubercle.

THE ANATOMICAL CONDITIONS IN PHTHISIS PULMONALIS.

Leaving now these preliminary observations which I have thought necessary in order to clear the ground, we turn to the more specific subject of discussion—namely, the Pathology of Phthisis Pulmonalis.

If we define phthisis pulmonalis as an emaciating disease involving destruction of the lung-tissue, our first task should be to determine what are the exact anatomical conditions which lead up to the formation of cavities in the lung, the formation of cavities being perhaps equivalent to the destruction of lung tissue, and forming, let us say, the criterion of the disease.

There are undoubtedly two distinct forms of the disease, and two modes in which cavities may form. It is not asserted that these two forms are absolutely separated in the actual case, but on the whole, we have two groups and two distinct anatomical conditions.

In one of these forms, and perhaps the commoner, the disease, in its purely anatomical aspects, is to a great extent, but not entirely, a catarrhal inflammation of the lung. Beginning as a rule in a series of finer bronchi, it extends to the lung-alveoli. The inflammation here manifests itself by the filling up of the lung-alveoli with large round cells—the derivatives of the alveolar epithelium. The physical result of this is that the portions of lung concerned are deprived of air; they are solidified, and these solidified pieces often, by their mere shape, suggest the form and arrangement of the ultimate lobules of the lung. They are grey in colour, and sometimes slightly pigmented. The stroma of the lung is also involved, and it is generally difficult to disentangle the various

elements. The products accumulated in the air vesicles after a time present a peculiar change. They undergo caseous metamorphosis, and not only they, but simultaneously the portion of lung tissue involved in the condensation. The significance of this process has not, I think, been sufficiently elucidated. In caseous metamorphosis there is not merely the drying in and fatty degeneration of inflammatory products but there is the actual death not only of these products, but of the piece of lung in which they are contained, so that the process warrants the name of caseous necrosis. If you examine a microscopic section of a piece of lung in which this process has occurred, you find simply a homogeneously granular appearance, in which you may be able vaguely to make out the outlines of the air vesicles, but very often not even that, the whole tissue being involved in an indiscriminate necrosis. We are here more immediately concerned with the anatomical details, so I do not pause to discuss fully the pathology of this process; but I would in the meantime emphasize the fact that sometimes this caseous necrosis is almost an acute process. Sometimes the disease runs rapidly on through the preliminary stage of condensation to that of caseous necrosis, without there being almost time for drying in to occur, and the cheesy material formed is rather a soft moist cheese. It is customary to describe inflammations having a tendency to caseous metamorphosis as scrofulous, the inflammatory products in these cases having a peculiar tendency to retrograde changes, but no mere degenerative tendency on the part of the products of inflammation will explain the marked necrosis of these products and of the lung tissue besides.

The caseous necrosis having occurred, the products may lie long unchanged, and may even remain as an obsolete piece of tissue, becoming encapsuled like a foreign body, then partly absorbed and partly impregnated with lime salts. More commonly, however, the caseous material after a time softens. It may be, as Hamilton suggests, that this softening is akin to the chemical change involved in the " ripening" of cheese, in which, according to M. Duclaux, " the main decomposition which takes place is that certain of the albuminoids, insoluble in water, become soluble." However this may be, the caseous material softens and breaks down, forming a cavity. If the piece of tissue be small, then a small cavity is the result, but probably neighbouring portions of the lung have been similarly affected, and the cavities increase in size by coalescence of several. Doubtless, also, similar processes are occurring successively around the forming cavity and so increasing its size.

In the other form of phthisis the anatomical conditions are very different from these, and we have an example of it in the case which was the immediate occasion of this discussion, and which I again bring before the Society. The condition which is most pronounced here is that commonly designated cirrhosis of the lungs, and in its more immediate anatomical features it consists in a new formation of connective tissue in the lung, with the usual contraction of the connective tissue—it is in fact an interstitial inflammation of the lung.

We may take the description of the anatomical conditions in this case as indicating the usual appearances in an advanced stage of this disease. The report book contains the following account of the state of the lungs and heart :—

" There is great shrinking of the left lung, so that the mediastinum is drawn greatly to the left, and the edge of the right lung passes in some parts fully an inch and a half to the left of the middle line, and the heart is drawn considerably to the left.

" The heart is moderate in size, but the right ventricle is considerably enlarged, forming the apex of the heart. The valves are normal, but the tricuspid orifice admits four fingers.

" The right lung is adherent almost throughout, but especially over the upper lobe. Here the adhesion is exceedingly firm, and the coalesced layers of pleura are greatly thickened. In this upper lobe there are numerous cavities, all of them smooth walled and with more or less of the sacculated form, without any distinct projecting trabeculæ. These cavities are sometimes quite distinctly in the form of bulbous dilatations of the bronchi, and are always directly continuous with one or more bronchi. [On examining the walls of the cavities there is found a great preponderance of inflammatory tissue, but with ciliated epithelium in abundance. The presence of this ciliated epithelium is determined in some of the most typical of the cavities.] Outside the cavities the upper lobe presents dense pigmented connective tissue, and there is not a trace in this lobe of normal air vesicles, nor is there any caseous material present in any part.

" The left lung is firmly adherent throughout, there being the same excessive adhesion over the upper lobe as in the other lung, and a still greater thickening of the pleura, which here reaches about half an inch in thickness. In the upper lobe there are also cavities distinctly bronchiectatic and dense pigmented tissue outside them. It is noted that the pigmentation does not pass into the thickened pleura, but stops short by an abrupt line at the sub-pleural tissue.

"It is to be noted that in both lungs the lower lobe is almost free from cavities, but there are isolated patches of condensation in the form of groups of nodular projections. Examined roughly in the fresh state, these are found to present rounded bodies supposed to be tubercles and containing distinct giant cells."

There are now one or two points which must be considered here in relation to the more immediate anatomical conditions. Hamilton has recently in the *Practitioner* given an account of the processes concerned in this disease, with much of which I am in full accordance ; but there are certain parts of this account with which I cannot agree, and while taking advantage of his excellent descriptions, I do not rigidly follow his account of the processes.

There are three principal situations in which connective tissue is present in the lung—namely, under the pleura, between the lobules, and around the bronchi, so that we may speak of sub-pleural, interlobular, and peribronchial connective tissue. These are all in intimate connection by means of the lymphatics, which communicate so thoroughly throughout these parts that the connective tissue in these three situations may be regarded as one. As evidence of this, Hamilton has shown that foreign material, such as dust inhaled, if it finds its way into the peribronchial connective tissue, is carried about in the lung and deposited in all three situations.

In interstitial pneumonia there is great new-formation of connective tissue, in the usual fashion of productive inflammation, in all these three situations. Just as in the liver the inflammatory new-formation occurs where there is existing connective tissue, the so-called capsule of Glisson, so here the inflammation produces primarily a thickening of the existing connective tissue. There is great thickening of the sub-pleural and pleural connective tissue, great peribronchitic new-formation, and the interlobular connective tissue is converted into thicker bands. But the inflammation does not confine itself to these structures, and the walls of the lung alveoli are invaded, and become thickened. The bronchial mucous membrane, on the other hand, becomes the seat of catarrhal inflammatory changes, and forms a muco-purulent discharge.

The new-formed connective tissue, like other inflammatory connective tissue—like the cicatrix—has a marked tendency to contract, and the flattenning of the chest which is so marked in this disease is a result of this. By the formation of the connective tissue and its contraction there is great

destruction of the proper vesicular tissue of the lung, and in this way masses of firm tissue come to occupy the place of lung tissue. The dragging in of the chest wall does not by any means fully compensate for the great shrinking which occurs, and there are two conditions which must be taken into account in this connection—namely, emphysema and the formation of cavities.

Localised emphysema or dilatation of the air vesicles is of frequent occurrence. It is an emphysema which has no special localization, but in a section of the lung, areas of emphysema will alternate with tracts in which there is nothing but connective tissue. In the emphysematous parts the walls of the dilated air vesicles are frequently thickened. There is no difficulty in explaining this emphysema; it is simply compensatory to the shrinking of the lung tissue so frequently referred to already.

The formation of the cavities is a more complicated process, but it may be said that in this disease dilatation of the bronchi is the essential factor in the formation of the cavities. To a certain extent the bronchiectasis is compensatory like the emphysema. It is to be remembered that the bronchi are no longer in their normal condition. The mucous membrane is infiltrated with inflammatory cells and softened; the peribronchitic tissue is also inflamed, and except where there is a concentric contraction, it may be expected to yield readily. Then, as has been so well shown by Hamilton, there are agents at work which often have a direct effect in pulling the bronchial wall outwards. We have seen that the new-formation of connective tissue is mainly around the bronchi, in the interlobular septa and pleura. The contraction of this connective tissue has often a direct effect on the bronchial wall. The pleura is fixed to the chest wall by firm adhesions, and the contraction acts on the chest wall, dragging it inwards. But it also acts on the bronchial wall, dragging it outwards, the chest wall and the bronchial wall being thus mutually approximated.

But there is another method by which bronchial dilatation occurs, and which I believe is often at the origin of the cavities. In the case under discussion, I found this method perfectly illlustrated. The inflammation of the connective tissue in this disease generally begins in the peribronchial tissue; it is a peribronchitis. It is not, however, a general peribronchitis, but the lesion occurs in a number of isolated spots, resulting in a series of local thickenings often pigmented, so that, in an early stage of the disease, the lung

may be studded with dark grey nodules which are mainly peribronchitic.   The new formed connective tissue, by its contraction, narrows the calibre of the bronchus, and may even obliterate it.   Behind this obstruction the secretion stagnates, and there is a progressive dilatation in which the conditions already alluded to take part.   Some of these small cavities often look as if they were completely cut off from all connection with the bronchi.   In the lung under consideration I was at first puzzled with one such, and it was by carefully following up a recess of it that I found an undoubted occlusion of the tube.   The walls of such cavities produce a muco-purulent material which fills them.

Cavities of large size form by the dilatation of the bronchi, but they can always be distinguished as bronchiectatic by considering their frequently sacculated form, the continuity of their lining membrane with that of the bronchi, and the nature of the process around them.   There is no evidence around them of breaking down of lung tissue but of new formation of connective tissue.   Examined microscopically the walls of the cavities are very different from those of mucous membranes, but epithelial elements are still to be recognised abundantly.   The proper wall of the cavity is, in fact, formed of altered epithelium with occasional groups of ciliated columnar cells.   In the case shown, it was only necessary to scrape the internal surface of one of these large cavities to obtain numerous ciliated epithelium cells.

THE RELATION OF PHTHISIS PULMONALIS TO TUBERCULOSIS.

Having now, as fully as the time at my disposal would admit, described the anatomical processes concerned in these two forms of phthisis pulmonalis, we have to consider what relation these conditions have to tuberculosis.   Is tuberculosis associated with these processes, and in what way ?   Few will deny that tubercles may be present in both these forms, but the relation which tuberculosis bears to the essential process is matter of discussion.   We must rigidly keep to our original ideas of tuberculosis.   It is an infective disease in which certain histological structures called tubercles are developed along with accompanying inflammatory products.

That phthisis pulmonalis may possess an infective nature is demonstrable in almost every case of catarrhal, or perhaps more correctly, caseous phthisis in which the disease has gone on to the formation of cavities.   I make it a point to examine the mucous membrane of the bron-

chial tubes in such cases, and, if the cavities are of any considerable standing, there is almost, without exception, tubercular ulceration of the mucous membrane. The mucous membrane near the cavities is usually almost continuously ulcerated, but, on passing downwards, isolated ulcers, obviously tubercular in character, are found, and even isolated tubercles. The tuberculosis of the mucous membrane often extends to the main bronchus, and even to the trachea, and I have seen deep ulceration of the trachea even exposing the cartilages in such cases. The tuberculosis is also accompanied by an acute inflammation of the mucous membrane, which I have seen even coated with an inflammatory false membrane. Again, it is in cases of large cavities, due to breaking down of the lung tissue, that ulcers form in the intestines. In a case which occurred a few days ago, the cavities were recent, and we had just the beginnings of tuberculosis of the intestine, in the form of nodules, many of them caseous, in the closed follicles, and in one or two cases the formation of a small crater-shaped ulcer. I believe that in the broken down lung tissue the tubercular virus is carried to the mucous membrane of the bronchial tubes, and is swallowed. In this way it is brought into direct contact with the mucous membranes, and produces its usual effects. I do not usually find any tubercular ulceration of the mucous membrane of the bronchial tubes or tuberculosis of the intestine in cirrhosis, or in connection with bronchiectatic cavities.

But in cirrhosis of the lung there is equally good evidence of the presence of the tubercular virus. In the case which Dr. Gairdner has just described, I found abundant miliary tubercles in that lung which is described as the sound one (as compared with the other), and I have placed sections under the microscopes which show this quite unequivocally. I found also undoubted tubercles in the liver and spleen, although they were not so numerous as in the usual cases of acute miliary tuberculosis. In this case then there is evidence of tuberculosis, the virus having even got into the blood, and infected the other lung throughout, as well as the liver and spleen.

No one will deny that tubercles often occur in the course of phthisis pulmonalis, but the important questions remain, Is tuberculosis an integral part of the processes in ordinary cases of phthisis ? Or is it always secondary, as we may suppose the ulceration of the bronchial mucous membrane and the ulcers of the intestine to be ? On this subject the views of different observers diverge, and it will be necessary to enter now on debateable ground.

It may be stated at the outset that there is no doubt that some cases of cirrhosis of the lung occur, and run their course without any suspicion of tuberculosis. I have here the lungs from a case of so-called Potter's phthisis, in which, apparently from the irritation of dust inhaled, there has been a great new-formation of dense pigmented connective tissue. I have also seen a case in which there seemed reason to believe that syphilis was the cause of the cirrhosis, what I took to be gummata existing in the midst of the new-formed connective tissue.

But in cases where tubercles are actually present, and present in the parenchyma of the lungs, whether in the one form of phthisis or the other, a difference of view exists as to their exact relation to the pathology of the disease. Those who hold the divergent views are agreed that the appearance of these tubercles is evidence of the existence of an infective process, the presence of a virus or ferment, so that in the case of both, the views are strictly consistent with what we have set down as the criterion of tuberculosis. But on the one hand it is asserted that *the tuberculosis is secondary to the inflammatory process, and the ferment or virus is produced by the caseous material,* while on the other hand it is believed that *the whole process is a tubercular one from the first, and that inflammatory products and tubercles are equally the result of the irritation of the tubercular virus.*

The most recent available exposition of the former view, is that given by Dr. Hamilton in his papers in the *Practitioner.* He states in the most definite way, "Where tubercle occurs in the lung, or in any other organ, it is always preceded by a caseous source of infection," and he even uses the expression "caseous virus," evidently in the belief that in the caseous material a process of chemical decomposition occurs, resulting in the formation of a ferment. Now, there is much that is enticing in this view, because, especially, it seems to dissociate two things which appear at first sight quite distinct, namely, the ordinary inflammatory lesions and the tubercular. There is no doubt that a virus does exist in caseous material of a phthisical lung, and the virus is conveyed along the mucous membrane of the bronchi, and also by the lymphatics of the lung, producing tuberculosis in the one situation or the other.

For myself I may say that I originally approached the subject of phthisis pulmonalis strongly imbued with this view of its pathology. I felt it to be necessary to keep clearly in view the characteristics of tuberculosis as exhibited in general and local tuberculosis; and Dr. Gairdner knows that I have

somewhat persistently refused to call anything tubercular which might by any chance be simply inflammatory, and have usually answered, " I don't know" to his question, " Is this tubercle?" when put at the *post-mortem* table before microscopic examination.

I have examined lungs in phthisis with the definite object of finding a non-tubercular catarrhal process, but I have been driven to the conclusion that *in all cases of caseous phthisis tubercles are inseparably mixed up in the morbid process.* I do not say that tubercles are invariably to be found in every microscopic section of a caseating piece of lung, but there are few exceptions, and these can be explained on the principles to be presently referred to. It is the same with cirrhotic phthisis. Here also, it seems to me, tubercles are inextricably mixed up in the process, and as in the case I have brought before you to-night they may be present without any caseous material being discovered after diligent search.

Take this lung, which was removed from a case examined *post-mortem* yesterday, as one example out of many. You see that the central parts of the lung—namely, the lower part of the upper lobe, and the upper part of the lower lobe, are the seat of an extensive "frog-spawn like" condensation. The disease is obviously advancing, and more and more of the lung is getting involved in a process which, beginning in what appears to be a simple condensation, soon passes on into a caseous condition. There are some signs of softening in the caseous material, but no cavity has formed, and even in the other lung, which was much more extensively involved, only one small cavity was discovered. Here is, obviously, a comparatively acute process of a progressive character, and microscopic examination shows that it is a tubercular process, or at least a process in which the formation of miliary tubercles is inextricably involved. The whole process in this lung seems to me a homogeneous one, and it happens that the patient has died at a period when it is nowhere far advanced. Are we to suppose that, at a still earlier period, there was a simple catarrhal pneumonia leading on to caseation and producing tubercles secondarily? When we see a process which is a consistent whole, and in that whole a particular element is an integral part, there must be strong evidence to convince us that that element is a secondary one. It seems to me much more reasonable in this case to suppose a virus acting on the lung tissue and inducing both inflammatory lesions and tubercles. The virus is self-propagating, and so the disease has a continuous tendency to spread.

I would here recur to the question already incidentally referred to of caseous necrosis. It is usual to explain this process by the occlusion of the alveolar capillaries from the pressure of the accumulated catarrhal products in the alveoli. Now, I cannot accept this explanation as satisfactory. The uniformity with which this process occurs, the manner in which it extends from definite centres, and the fact that lung tissue and catarrhal products die simultaneously, seem to me to be inconsistent with this view. We know that occlusion of vessels will produce a process essentially similar, as we often see a cheesy looking wedge in the kidney from embolism of the renal artery. Here there is a sudden deprivation of blood, and the condition may pass directly into that of the pale infarction; which is a necrosis in many ways similar to caseous necrosis. In the case of the lungs it is difficult to believe that a pressure from within the alveoli is sufficient to obstruct the vessels, not only of the alveolar wall, but also of the interlobular connective tissue, which becomes involved in the caseous necrosis. We are to remember that the material for the formation of the catarrhal products is obtainable only from the blood-vessels, and it seems inconsistent to suppose that these products will go on increasing till they finally occlude their own source of supply. It seems to me more reasonable to suppose that an agent acts on the tissues producing the catarrhal processes and the tendency to necrosis, the capillary circulation being impossible when the damage to the tissue has reached a certain degree.

Turning now to the cirrhotic form of phthisis, I have carefully examined in various cases what I took to be the parts in which the disease was in its earlier stages. In the case before us I chose the isolated hard nodules which exist apart from the general mass. Here the process consists in its more general aspects in a new-formation of connective tissue, with a marked tendency to contraction such as we see in other cases of cirrhosis. But *wherever there is cirrhosis there are tubercles, and wherever there are tubercles there is cirrhosis.* The two processes are indissolubly connected the one with the other, and the tubercles take part in the transformation into connective tissue, becoming converted into hard dense nodules. Here then we see again tuberculosis and inflammation associated, and in the present case as well as in others I could see no source of caseous infection.

It will be seen, then, that in both forms of phthisis the inflammatory process and the tuberculosis are concomitant, and though the inflammatory products may be in the anatom-

ical relations the more prominent, yet they are no more predominant in the lung than are the inflammatory products in tubercular meningitis, and no one hesitates about calling that a tubercular disease. I think we are forced to the conclusion that tubercles and inflammatory products are both the result of the irritation of the tubercular virus, and it is even conceivable that the inflammatory processes might be produced without the miliary tubercles.

It may here be asked, How is it that the tubercular virus produces two such various lesions as catarrh with caseous necrosis and interstitial inflammation ? This is a question which it is very difficult to answer. We can only say that the tubercles themselves show very different tendencies in the two conditions. In the catarrhal form the tubercles undergo caseous metamorphosis in common with the inflammatory products. In the cirrhotic form they undergo fibrous transformation in common with the inflammatory new-formation. In these respects it will be observed the tubercles again show their affinity to inflammation.

It may here be noted that tubercles, either by caseous necrosis or fibrous transformation, tend to become obsolete. The individual tubercle becomes obsolete, but the virus is obviously self-propagating, and the tendency is to the production of fresh crops of tubercles and fresh inflammatory lesions; but even the virus may cease to be produced, and in that case the disease will undergo a spontaneous cure, the tubercles naturally becoming obsolete. We know that calcareous or pultaceous material is often found at the apices of lungs surrounded by cicatrices while the rest of the lung is normal.

In conclusion, it may, I think, be said that in tuberculosis we have an infective process. In general tuberculosis this manifests itself in a general infection of the system, the infective material being conveyed by the blood. In local tuberculosis the infective material is obviously self-propagating, so that the lesions extend from the original focus to neighbouring parts. In phthisis pulmonalis we have again an infective process, the lesions extending as a general rule continuously from one part of the lung to another. These lesions are in their general features inflammatory, but when examined in detail there are evidences, in the histological structure, of tuberculosis, and even the inflammatory lesions are probably the effect of the tubercular infection. Caseous necrosis is of frequent occurrence, involving tubercles, inflammatory products, and lung tissue, and the occurrence of this probably points to

the existence of some particularly virulent agent, and is not explicable on the view of a mere secondary degeneration of inflammatory products.

The question of the source of the virus has not been entered on here, mainly because it has been my desire to keep within the bounds of matters of which I am personally cognisant. It is clear, however, that all persons and all tissues are not equally susceptible to the virus, just as all persons are not equally susceptible to the viri of typhus, or any infectious fever. It is more for clinical observers to determine under what circumstances the virus is introduced, and what determines the susceptibility of the individual.

ADJOURNED DISCUSSION—*25th February.*

DR. FOULIS remarked that, in the brief time at his disposal, it was not possible to give a view of the whole of so complicated a subject as tuberculosis and its relation to phthisis, and he would content himself with referring to a few points. One of these was the infectious nature of tuberculosis, which, since the time when Villemin produced a generalised tuberculosis in the guinea pig, by injecting into the peritoneal cavity tubercular matter, had been the subject of much experiment. The result of this experiment was to show that the disease could be introduced into the bodies of animals in various ways. Chauveau succeeded in infecting animals by feeding them with food mixed with tubercular tissue. Cohnheim, by introducing particles of tubercular tissue into the anterior chamber of the eye, induced, after 20 to 30 days, a local tuberculosis of the iris, which then spread to the rest of the body. And Tappeiner, causing dogs to inhale for a certain time air in which pulverised tubercular tissue was suspended, induced in them a tuberculosis of the lungs, and afterwards of the other organs. It was noteworthy that his experiments, when repeated with pulverised calf's brains, and with matter from scrofulous glands of the neck, gave negative results. All these experiments showed that the tubercular taint could be introduced into the body by different paths, but that once in, it spread all over it like any other virus. In the case of man the facts pointed in the same direction; and there were cases which pointed strongly to the transmission of the disease from the lower animals to man, *e. g.,* from the cow. On the table were the parts from the body of a boy æt. 3½ years, who had died after a comparatively short and sudden illness, in

which the first symptoms were abdominal swelling and sickness, followed by cough. On *post-mortem* examination, the peritoneum was found studded over with yellowish-white nodules in immense numbers; some very minute; others larger, up to the size of a pea and over, while in places there were masses of the same firm, yellowish-white tissue. These nodules all presented the same aspect, and even the most minute were yellow and opaque, and surrounded by a zone of congestion. The mesenteric glands were very large, firm, and yellowish-white; the bronchial glands similarly affected, but to a lesser extent; there was a yellow nodule half an inch in diameter in the wall of the left ventricle of the heart; another in the left suprarenal capsule; and several in the superficial layers of the liver. With this there was evidence of pleurisy on both sides; and at the base of each lung an area of greyish-red solid pneumonic tissue, much larger in the left lung than in the right. It was noticeable that in the middle of the left lung the lung tissue was solid, but œdematous, and that in this œdematous area were two or three small irregular cavities opening into bronchi, and full of yellow purulent fluid. In the apex there were several groups of more translucent greyish-white tubercles amid a reddish and crepitant lung tissue. In the ileum, a single small ulcer, on the peritoneal area of which was a group of minute grey miliary tubercles. Allowing now for the absence of direct and detailed proof, there was even in this case such a degree of resemblance to the Perlsucht disease of the cow as to suggest the idea of a direct communication, perhaps by means of the milk as described by Gerlach. It might be said that the caseous material was the original starting point of the disease, but it was not enough to say so; for how many cases were there not in which caseous masses failed to infect the system, while on the other hand it could hardly be denied that there occurred instances of acute tuberculosis where a minute inspection of the body failed to reveal the existence of caseous masses. There must therefore be a specially infectious character in the tubercular material, whereby it played the part of a particulate virus, whose particles lodged in the various organs, and there gave rise to tubercles. This was not mere mechanical irritation, for in the cases of injection of powdered cork or cinnabar into the peritoneum, there was indeed a local eruption of miliary tubercle-like nodules, but there was no general infection of the system; and so in the lungs the miliary nodules which were caused by dust particles were limited to the lungs, and did not spread further. What, then, was the peculiarity of the

infectious miliary tubercle? Attempts had been made, by Langhans and others, to find a pathognomonic feature in the *giant cell*, so often found in tubercle. But the existence of giant cells in many widely differing morbid structures rather interfered with this view; and besides this, there was a growing belief among a certain class of pathologists that the giant cell in tubercle was often not a cell at all, but a section of a vessel, either lymphatic or blood-vessel, distorted, distended, and filled with granular *debris* and the nuclei of its own endothelium. If this view were correct, it chimed in with the theory of a particulate virus in tubercle, for it was easy to follow the theory of impaction of the virulent particle in the lymphatic or blood capillary, and the formation of the tubercle around that spot. The giant cell being disallowed as a pathognomonic feature in tubercle, nothing remained which the microscopic examination at present was capable of revealing; and, therefore, Cohnheim had fallen back on the impracticable dictum, that only by inoculation experiments in suitable animals can we finally affirm whether a particular tubercle be of the true infectious sort or no.

As to the share taken by tubercle in the formation of cavities in the lungs, and of ulceration in the bowels and kidneys, that depended on the amount of additional irritation in these organs, whereby a large surplus cell growth was set up, in consequence of which there was a more ready breaking up and loss of tissue. In parts of the body away from contact with air, or urine, or fæces, the tubercle did not break up in this way, but was, if the patient lived, either removed by absorption or underwent fibrosis, and became harmless. Tubercle was only one cause of lung cavities, which could sometimes be traced to bronchiectasis, in which case they were of very limited extent, or to loss of tissue in pneumonia; but it was certain that cavities did sometimes take their origin in softened and broken down true miliary tubercle.

Mr. D. J. HAMILTON (Edinburgh) said—The first duty I have to perform, Mr. President and gentlemen, is to thank you for inviting me to come to hear and to take part in the discussion of this evening. The subject is one which is full of interest both for the pathologist and for the physician, and the value of having clear ideas concerning it cannot be overestimated.

It seems to me that, in order to start any discussion upon the subject of tubercle and phthisis pulmonalis, it is necessary to define in exact terms what we mean when we use these

words. They are employed so loosely, and with such wide and diverse significations, that any argument about them will surely end in confusion unless we settle what lesion we are to call phthisis pulmonalis, and unless we can give something like a rational definition of what a tubercle is.

I presume that the members of the Society will agree with me that the body which we generally understand as tubercle is typically seen in the different organs in general tuberculosis of children and adolescents, consecutive to the cheesy softening, say, of an enlarged lymphatic gland of the neck. Such tubercles are found in the lung, liver, spleen, kidney, peritoneum, pleura, meninges, and elsewhere. Granting, therefore, that these bodies are typical instances of tubercle, what I propose to do is to take the structure of one of these as our model, and to call bodies similarly constituted by the name of tubercles, and to discard all other bodies from this nomenclature which do not possess such a composition.

In this course I believe I am thoroughly justified from the fact, which in my experience has never failed, that, if properly examined, all the nodules occurring in such cases have identically the same histological structure and mode of origin. It may happen that the development of this structure might approach perfection more in some organs, or in particular nodules in a certain organ, than in others, but, nevertheless, if a series of the nodules in any organ be systematically examined, essentially the same composition and mode of growth can be observed in each. A question has been raised of late as to whether the mere histological features of a tubercle can be taken as a test of identity. My reply to that is that if we can define histologically what a cancer, a sarcoma, a fibrous tumour, or a myoma is, then the same applies with even more force to the detection of a tubercle.

The appearance of the body, which I will call tubercle, is, that it is rounded in shape, about the size of a mustard seed, grey or yellow in the centre, somewhat fibrous or even cartilaginous in texture, and when examined microscopically it is found to be an isolated and sharply demarcated mass of new formed tissue. In its centre or at its sides are invariably, if the tubercle is not too old or too young, one or more giant cells. From their periphery processes of fibrous tissue are given off, which, by dividing and subdividing, form a surrounding reticulum. Within the meshes of this reticulum, or lying flatly upon it, are connective tissue corpuscles, which bear the same relationship to the fibrous wall of the reticulum on which they lie, that they bear to a bundle of ordinary fibrous tissue.

The reticulum is usually somewhat condensed at the periphery, thus constituting a spurious capsule. This limits the growth of the body, and gives it the rounded appearance which is so characteristic. One nodule does not fuse with those adjacent to it, although it may be connected to them by an intervening septum of fibrous tissue. Finally, this body, so far as I have seen, is always preceded by a softening caseous mass either in the tubercular organ itself or situated in some distant part.

The term phthisis I employ in an exclusively local sense, not as referring to a general marasmus, the result of a lung disease, but merely as indicating a local destruction of the lung of a peculiar nature. This destruction of the lung results from caseous catarrhal pneumonia. Softenings of the lung may owe their origin to so many different causes that this restriction is absolutely necessary. The organ may be the subject of a so-called fibroid phthisis, a coal miner's phthisis, or a stone mason's, or needle grinder's phthisis. Or it may be a gangrenous phthisis, or a phthisis due to gradual obliteration of a branch of the pulmonary artery. All these I exclude from the category of pulmonary phthisis, for the very good reason that they represent processes essentially different in their causation. I would also specially emphasize that bronchiectasy is frequently, very frequently, mistaken for phthisis resulting from catarrhal pneumonia. It need hardly be said that I exclude such mere bronchial widening from this designation. Phthisis pulmonalis, as I intend speaking of it to-night, is the destruction of the lung which results from catarrhal pneumonia.

Having thus stated what I mean by the terms *tubercle* and *pulmonary phthisis,* let us examine what the conditions are under which tubercle arises in the lung.

It is either the primary disease *of the lung*, or it is secondary to some lung disease which is not tubercular. As an instance of primary tubercle, we may take the case familiar to every one in the child, where an eczema of scalp is the commencement of the history, an enlargement of the cervical glands follows, and where death from general tuberculosis finally occurs.

In such a case both lungs will be universally studded throughout with exemplary tubercle nodules, grey or slightly yellow in the centre, isolated, and having all the other characteristics previously enumerated. The cervical glands will be found to be cheesy. In such circumstances the tubercle is the only disease of the lung. It may be otherwise healthy. It looks as if so many parasites had been scattered throughout it.

The other condition under which tubercle of the lung is found is where it is secondary to some caseous deposit which is not in itself tubercular. This caseous deposit may have various modes of origin. A catarrhal pneumonia is the commonest. Gummatous areas of cirrhotic lung tissue also induce it. Enlarged and cheesy bronchial glands, especially enlargement of those small glands which are continued far into the lung substance, as the so-called lymph-adenoid deposits. These frequently become swollen in children after the bronchitis and catarrhal pneumonia of measles, and when they caseate are one of the commonest causes of general tuberculosis.

In such lungs the tubercles have an entirely different distribution, although they are structurally the same as those found in the primary disease'; and the difference in their lines of distribution is owing to the channels by which they are propagated. Both are due to the irritation of the caseous matter which has been absorbed from the primary source of infection; but, in the case where this infecting source is situated without the lung, the caseous matter is carried into it by means of the blood-vessels; while, if localized primarily in the lung itself, the lymphatics are the channels by which it is conveyed.

Such being the case, it is evident that, in the primary form, the general distribution of the tubercles is owing to the fact that particles of this caseous irritant, if we may so call it, are circulating with the blood current, and are carried indiscriminately, as regards distribution, into the lung and other organs. In the instance of tubercle accompanying a softening deposit of caseous catarrhal pneumonia, there may be general tuberculosis elsewhere, but in the lung the tubercle has a local distribution, owing to the neighbouring lymphatics having absorbed the caseous irritant.

Now, I hold that it matters not whether the caseous irritant gets into a blood-vessel or into a lymphatic-vessel. In both cases it will equally well give rise to a tubercle. All that seems necessary for the growth of a tubercle is the caseous irritant and an endothelium or connective fibrous tissue, that is to say, a meso-blastic structure. The reaction of the one on the other is capable of developing this neoplasm. The most favourable endothelia are those of the capillary vessels and the small lymphatics.

I have previously defined phthisis pulmonalis as that softening of the lung which results from catarrhal pneumonia. There are three distinct stages in the disease—as distinct as the stages of a croupous pneumonia.

The first is the stage of acute or sub-acute catarrh, the second is the stage of caseation, and the third is that of phthisical softening. In the first stage, the air vesicles of certain lobules are filled with catarrhal fluid. This fluid is made up of mucus, with great numbers of large cells derived from the proliferation of the nuclei of the pulmonary epithelium.

In the second stage, this fluid becomes richer in cells, poorer in mucin constituents, and it caseates. The walls of the air vesicles containing it also participate in the caseation. The cause of this cheesy degeneration is the gradual obliteration, as shown by injected specimens, of the capillaries supplying the part, from the pressure exerted upon them by the accumulated catarrhal products.

In the third stage, the caseous necrotic mass softens or ripens in the centre, and a phthisical cavity results.

In other organs having a tubular structure and lined by epithelium, there is an analogous process of caseous catarrh and phthisis. The so-called genito-urinary phthisis and phthisis of the testicle are instances of this.

The general impression is that phthisis of the kidney and tubercle of the kidney are the same disease in different stages, but I hold that this is entirely erroneous. The so-called phthisis of the kidney does not commence as a deposit of tubercle, and a primary deposit of tubercle in the kidney does not lead to a phhthisis any more than a primary deposit of tubercle in the lung induces a phthisis of that organ. Phthisis of the kidney commences just as catarrhal pneumonia does, in an accumulation of epithelial products in the urinous tubes. This epithelium, instead of being voided, as usually happens, becomes impacted in the urinous tubules. It dries and (along with the surrounding tissue) caseates just as in catarrhal pneumonia. The caseous mass then softens, and a phthisical cavity results. Tubercles may now form in the neighbourhood, just as they do in a phthisical lung. They are secondary to the primary catarrh.

Tubercle of the kidney, when the primary disease of the organ, usually does not become excavated to form a cavity. A nodule may soften in the centre, but the *debris* is soon absorbed, and the cavity closes by cicatricial contraction. It is a purely local deposit. Phthisis of the kidney, however, involves large masses of the kidney substance, whole groups of tubules, and the softening may be so general that nothing but the capsule and the pelvis actually may be left. In the case of primary tubercle of the lung the same holds good. It does not give

rise to a phthisis, but rather, in the course of time, to a cirrhosis of the organ.

In contrast to pulmonary phthisis as above defined, let us briefly examine some of the other morbid processes in the lung which also go by this designation.

One of these is named "fibroid phthisis." This disease is due to chronic interstitial pneumonia, and the so-called phthisis is nothing more than a bronchial dilatation—a bronchiectasy. The cavities so formed are constantly mistaken for cavities due to lung disintegration. They are frequently very large, so that they may involve the greater part of an upper lobe. In some instances of this disease an obliterative thickening of the inner coat of a branch of the pulmonary artery may occur. This, in certain cases, produces a local destruction of lung substance of limited extent, but the space so left being invariably in the midst of a mass of cicatricial tissue closes by surrounding contraction. In true catarrhal phthisis it is not so. It is rare, if it ever happens, that a truly phthisical cavity closes in this way.

In the coal miner's lung a disintegration sometimes takes place, known as a phthisis. A sloughy cavity is formed, accompanied with great destruction of the lung. This softening, however, is never caseous in its nature. It is due simply to the pressure caused by the accumulated foreign particles upon the small branches of the pulmonary artery which they surround. It so presses on some of them that in severe cases I have seen the lumen of the artery entirely occluded. The result is that a slough of the lung tissue follows.

In the stone mason's lung the so-called cavities are usually dilated bronchi. The stone dust seems to be much more irritating than coal dust or soot, and induces a cirrhosis of the organ. The cirrhotic tissue then contracting, pulls the bronchi open on principles well recognised.

The absurdity of including all these different sources of cavity formation under one common designation, therefore, becomes apparent, and leads to endless confusion.

Having already absorbed so much of the time of the Society, I feel that perhaps I have said enough on this very wide subject, although there still remains a great deal of interesting material which might form subject for debate.

Before concluding, however, I would, with your permission, say a few words on a subject already broached by Dr. Foulis— namely, the transmissibility of tuberculosis.

Villemin's experiments conclusively proved that the contents of a cheesy gland, if inoculated, are capable of inducing a

general tuberculosis. The later experiments of Orth and others have proved beyond any reasonable doubt that caseous matter, when swallowed, will also induce the formation of tubercle. Are we, therefore, to say with Cohnheim, that the caseous matter and the tubercle are identical—that all is tubercle which, by inoculation into properly constituted animals, is capable of inducing tuberculosis ? I most distinctly beg to oppose this opinion. If I apply solution of cantharides to my skin, and I thereby produce a vesication, am I, by any logical process, to conclude that the cantharides and the vesication are necessarily the same. The two cases are parallel in their conditions. The caseous matter is, I hold, an irritant, and the thing which we call tubercle is merely the fibrous hyperplasia resulting from the application of that irritant to an endothelium. The whole of the histological elements entering into the constitution of a tubercle, if sufficient time is given, and after the stimulating effects of the irritation have passed off, resolve themselves into fibrous tissue. The giant cell is simply, as Virchow long ago pointed out, an enlarged connective tissue corpuscle. Apply any irritant of the same power to an endothelium and giant cells will be formed in abundance.

A great deal has of late been written about the transmissibility of tubercle from person to person, or from the lower animals to Man. The enlargement of the cervical glands in strumous subjects has been accounted for by the consumption of milk derived from cows which were supposed, but not proved, to be the subjects of *Perlsucht,* or bovine tuberculosis. The occurrence of tubercular meningitis has been attempted to be traced in certain cases to the action of a subtle tubercular poison which, when inhaled, finds its way from the nares through the ethmoid plate to the cerebral meninges. Such speculation, for we cannot call it otherwise, is idle, and ill calculated to throw anything like a scientific light upon the subject of the assumed transmissibility of the tubercular poison or irritant from the lower animals to man.

No one can deny that if the milk of a tubercular cow were to produce an epidemic of tuberculosis in the consumers, there would be a strong *prima facie* case in favour of the theory of its transmission from beast to man by this means. But that the milk of tubercular cows actually contains this poison, seems to be very doubtful, and has never been proved beyond dispute. It seems to be a particulate element, and the manner in which it spreads throughout the body strongly impresses one with the idea of its being conveyed embolically.

If, then, it acts embolically, I see some difficulty in understanding how it can escape through the udder of the cow. The fact that tubercular mothers do not give birth to tubercular children is also strongly in favour of the theory of its embolic action. In syphilis the case is quite different. Here we have evidently to do with something which is soluble in the blood, and which is capable of transmission through the boundary between fœtal and maternal circulations.

Taking all circumstances into consideration, I think that the danger of tuberculosis being transmitted from the cow to man has been a good deal exaggerated, and that the subject requires further careful observation and analysis.

Finally :—Is pulmonary phthisis hereditary ? I would say that the tendency to it certainly is ; but, that it is due to a special poison transmitted from parent to child, I hold we have not any evidence to prove.

That which I hold is transmissible is the peculiarly sensitive character of the pulmonary epithelium, by which it is more easily influenced by outward irritation than that of a normal individual. It is very much the same condition, I presume, as that of the epidermis of the face in certain persons in whom the exposure to cold air would induce desquamation to an inordinate extent, while in another individual the effect would hardly be appreciable. A fineness of skin and a profuse growth of hair are two of the characteristics of persons liable to phthisis.

These conditions of the epidermis are apparently coincident with a similar " delicate " or impressionable state of the alveolar epithelium. This is evidently engendered by bad hygienic surroundings, and when once set up appears to be capable of transmission from parent to child. Such a person is said to have a delicate chest, and the slightest undue exposure is sufficient to induce a broncho- or catarrhal-pneumonia. If the catarrhal products should accumulate and dry, as they have a great tendency to do in such individuals, then caseation occurs, and, as an effect of this, disintegrative softening, or, as I have called it, pulmonary phthisis follows.

Dr. Gairdner said that, having been requested to take part in this discussion, he gladly did so, although fully aware that on the pathological side he could not pretend to either the information or the opportunities of personal investigation which would entitle him to rank with the preceding speakers. In this respect he followed Dr. Hamilton at a great disadvantage ; for the Society had just listened to a most able,

luminous, and thoroughgoing exposition of the histological and pathological relations of tubercle, from one who, by his studies abroad and at home, might be considered as perhaps better fitted than any other to represent the great impulse of pathological doctrine commonly associated with the name of Virchow; whereas he (Dr. G.) had acquired most of his experience in pathological histology during the time when these ideas were as yet inchoate—*i.e.*, before the publication of the famous *Cellularpathologie* in 1858, and had since that time only kept up his interest in the subject as a physician might do, without too much diverging from clinical work. Still, in a Society like this, and in a discussion like the present, there might be something appropriate in these remarks from one who, beginning as a pathologist, had ended as a physician. Now, from this point of view he was inclined, in the first place (though not a remark of the first importance), to take exception to Dr. Hamilton's view of *phthisis pulmonalis* as implying merely ulceration of the lungs, just as in the so-called renal phthisis ulceration of the kidney and ureters gave the name to the disease. Beyond all question the term phthisis, interpreted from the historical and clinical point of view, does not mean ulceration, nor yet destruction of any kind, of the lung or any other organ, but wasting, or, as it is still popularly called, *decline*, of the whole body; and it is only in modern times, and for the most part since the time of Louis, that the inverted application of the word here referred to arose. Phthisis does not at all, in its essential meaning, represent tubercle or any other pathological state of the organs; even phthisis pulmonalis does not mean wasting of the lungs, but wasting of the whole body accompanied by predominating pulmonary symptoms, which the pathologist now well knows to be in general significant of what used to be called tubercular disease in the lungs and elsewhere. Passing from this matter of definitions, however, to the more essential questions involved in this discussion. It is not difficult to indicate several epochs, each marked by a special character or tendency, both of observation and of opinion, in regard to the diseases commonly considered as having affinity with tubercular phthisis. We need scarcely, however, for the purpose at present in view, go back beyond the time of Laennec, or from 1819-25—the interval between Laennec's first edition, and the great work of Louis on *Phthisis*, a time which all will admit, notwithstanding the previous foundation laid by Bayle in 1810, to have been the great period of initiation, for the medical profession at large, into the idea of what

was afterwards called tuberculosis. We may call this the period
of the recognition of tubercle as a distinct and probably specific
morphological type, related in many ways to a great variety
of previously well known diseases, and especially to phthisis
pulmonalis. By thus defining and specifying tubercle on the
basis of anatomical facts observed in connection with clinical,
and especially physical, diagnosis, Laennec unquestionably
gave an importance and a definiteness to the idea of tuber-
culosis, which were entirely novel, and which became the
starting point of a host of new observations and researches.
Inheriting, as we do, the results of this movement as trans-
mitted and carried on by Andral, Cruveilhier, Carswell, and,
above all, by Louis, we are perhaps apt to ascribe to Laennec
opinions about tubercle which he would probably not have
stated without reservations; and errors which were the errors
of others more than his. For example, although Laennec
undoubtedly laid great stress upon both miliary and crude
tubercle as distinct anatomical forms, we are scarcely
authorised in affirming that he regarded either of them as
being essential to the idea of a tuberculous structure.* On
the contrary, in the description he has given us of what he
called "tuberculous infiltration," we can easily observe him to
be grappling with the same difficulties that we now experience
as to the connection of tubercular with inflammatory processes.
[Dr. G. here showed a portion of lung which he had preserved
for more than thirty years, as being a typical specimen of
Laennec's infiltrated tubercle, but which now would probably
be designated as caseating pneumonia.] It is by no means to
be too readily assumed that Laennec believed a tubercular
condensation of the lung, or even what he would have
regarded as a tubercular excavation, to be impossible without
those definitely rounded forms, called more distinctively
tubercles, occurring as a first stage in the process. All that
his researches necessarily imply is the frequent presence of
the miliary or of the crude form of tubercle, as a note or
sign of the specific constitutional taint which leads, in so

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* " La matière tuberculeuse peut se développer dans le poumon et dans
les autres organes sous deux formes principales, celles de *corps isolés* et
d'*infiltrations*. . . . Quelle que soit la forme sous laquelle se développe
la matière tuberculeuse, elle présente dans l'origine l'aspect d'une matière
grise et demi-transparente, qui peu à peu devient jaune opaque et très-
dense. Elle se ramollit ensuite, acquiert peu à peu une liquidité presque
égal à celle du pus; et, expulsée par les bronches, laisse à sa place des
cavités connues vulgairement sous le nom d'*ulcères du poumon*, et que nous
désignerons sous le nom d'*excavations tuberculeuses*."—*Ausc. Méd.*, 2ième
edition, 1826. T. I, p. 534.

many cases, to destructive excavation of the lungs, as well as to a number of other local lesions similarly characterised by a tendency to ulcerate. Laennec unquestionably believed that the tubercular processes, taken as a whole, were specific, and distinct from, though they might be associated with, inflammation.* He was, however, familiar with the "secondary eruptions," as he called them, of miliary tubercles occurring as the result of localised caseating deposits of older date, only he regards these older deposits also as a part of the "general disposition" which presides over all the local manifestations alike.† So with regard to hæmoptysis, Laennec does not maintain that the ancient doctrine of *phthisis ab hæmoptoe* is absolutely and in every case wrong, but only that there is no positive fact which proves that hæmoptysis can, *per se*, originate tubercles, while the presumptions are, on the whole, the other way, and the majority of cases of hæmoptysis occur in the course of tubercular disease already in progress.‡ It will thus be seen that Laennec, even when his opinions are not in accordance with more modern pathological ideas, has stated them in such a way as not to be open to the censures that have sometimes been passed upon him.

The second epoch which requires notice is that of the first impetus of pathological histology in relation to tubercles, by the application of the microscope to the analysis of tubercular and scrofulous structures, in the hands of Lebert, whose work on the subject was published in 1849. The successors of Laennec had so insisted on the specificity of tuberculosis, that it was almost inevitable that the microscope, in the first enthusiasm of its application, should be expected to disclose a specific form corresponding with the assumed specific nature of the deposit, or exudation (as it was then commonly called). This Lebert assumed to have done by the discovery of the " tubercle-corpuscle ; " and for a time *morphological specificity* was in the ascendant, and not only tubercle, but inflammation, cancer, and almost all kinds of tumours, were supposed to be demarcated absolutely in nature by the cell-forms contained in them. This pathology, however, did not hold its ground

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* He maintains this at great length in opposition to Broussais, in a special article "Les tubercules sont ils un produit de l'inflammation." *Ausc. Méd.*, p. 562. "Une multitude de faits prouvent," he concludes, "que le développement des tubercules est le résultat d'une disposition générale, qu' il se fait sans inflammation préalable, et que, lorsque cette dernière coïncide avec l'affection tuberculeuse, elle lui est le plus souvent postérieure en date." P. 578.

† *Ausc. Méd.*, 2ième edition, 1826. T. I, pp. 553 and 579.

‡ *Ibid.*, p 645.

very long. Scarcely had it been promulgated, before Reinhardt was at work on the so-called "inflammation globule," or compound granular corpuscle found in the lungs and elsewhere; and by a magnificent series of generalisations, published mostly in *Virchow's Archiv*, it became apparent that the assumed specificity of cell-forms was devoid of foundation in fact; and that cells, however arising, *e.g.*, in physiological tissues, tubercle, inflammation, cancer, underwent similar processes of evolution and decay, so as at certain stages of their existence to be undistinguishable from each other. Thus, the way was paved for Virchow's famous *Cellularpathologie*, published in 1858, and his larger, if not more important, work on *Morbid Growths*, in 1862-63. The doctrine of these works was that all pathological cell-forms were but evolutions and outgrowths from normal structures ; in fact, that every single element of a so-called new formation, instead of arising *de novo* in a plastic medium or exudation, was based upon a pre-existing cell or nucleus ; so that *omnis cellula e cellula* became the general law in the light of which all pathology as well as physiology was to be studied ; and as regards the tubercle-corpuscle in particular, its specificity was entirely denied, and its morphological characters affirmed to be simply those of any shrunken, withered, organism of feeble vitality, incapable of further development, and yielding readily to disintegration. Thus arose the idea of caseating structures of indifferent origin, sometimes inflammatory, often glandular, the result of previous inflammatory irritations, which, it was held, at certain stages of their retrograde metamorphosis, or *necro-biosis*, gave rise to new combinations of organic debris which, by their influence on the neighbouring tissues, or even sometimes on distant parts, inoculated them as with a virus or ferment, and produced secondary crops of miliary tubercles. Under the influence of this system of doctrine morphological specificities altogether disappeared, and the position of tubercle became somewhat like that of the secondary abscesses in pyæmia ; most of the changes in organs which, since the time of Laennec, had been regarded as tubercular, were now said to be simply inflammatory, and especially almost the whole of the yellow or crude tubercles, together with all the scrofulous cheesy deposits in glands, were declared to be non-tubercular, and the name of genuine tubercle was reserved to be applied, if at all, only to the miliary granulations of late origin, or what Laennec had already called the "secondary eruptions." But while this doctrine was becoming largely accepted in Germany, a new impulse was given in France to the doctrine of specificity of tubercle

from the experimental side, by the large number of artificial inoculations in animals, practised by Villemin between 1865 and 1868, the results being published in a volume in the latter year. This was an absolutely new starting point; it was plausibly maintained that tubercle, whatever its morphological characters, is demonstrably as specific, and under certain given circumstances as specifically infectious or inoculable, as syphilis or small-pox; a view obviously opposed to, and, indeed, in a great degree destructive of, the hypothesis of the origin of tubercle indifferently from almost all caseating inflammatory deposits. From that time to the present, the successive researches of Wilson Fox, Sanderson, Klebs, Buhl, Cohnheim, and others, have been directed towards the clearing up of the obscurity left by the apparent conflict of the morphological pathology current in Germany, and the experimental results first formulated in France by Villemin. There cannot be a doubt that the absolute validity of the conclusions of this observer has been justly called in question, inasmuch as it has been shewn that in the animals susceptible of infection, other than tubercular substances will sometimes lead to results not dissimilar from tubercular inoculations. On the other hand, it is not without significance, that a distinct movement of reaction has taken place in Germany, as regards the morphology of tubercle; some of the best authorities, as Rindfleisch, being now disposed to affirm, on morphological grounds, that caseating scrofulous glands, and also in many instances other yellow caseous deposits, must be admitted to be tubercular after all, and not merely inflammatory. We have heard Dr. Hamilton's opinions on this subject, and it is evident that they are not altogether the same as those of Dr. Coats and Dr. Foulis. In particular, the significance of the giant cell, and the claim of miliary tubercle to be the sole representative, morphologically, of tuberculosis, are very differently handled by these experts. But the most remarkable fact in this lengthened story is that Cohnheim, certainly one of the most advanced and original minds at work in Germany, now tells us that neither in giant cells nor in any histological character whatever, can the true pathological diagnosis of tubercle be found, but only in the results of inoculation into the aqueous humour of an animal; and that the sequelæ of such inoculation are specific, in much the same sense as in the case of syphilis or small-pox. It is impossible to reconcile these varying opinions; but in presence of them it may be permitted to a physician to reserve his judgment, and to suppose that the last word in this great question

has not been spoken yet. Dr. Gairdner concluded by putting briefly some questions from a practical and clinical point of view, which appear to remain undecided after all that pathology has told us. F. von Niemeyer, in his *Clinical Lectures on Phthisis*, which are a most thorough-going application of Virchow's doctrine, affirms repeatedly that in order to account for the phenomena of inflammation in different subjects, especially as leading or not leading to casea-tion, and therefore to secondary tuberculosis, you must assume a "vulnerability" on the part of certain persons to irritations which leave little, or at least far less permanent, impressions on others. The so-called scrofulous child is a vulnerable subject in one direction; his eyes, his skin, his bones and joints succumb to influences that do not disturb the health of other children, and caseating deposits are the result. The adult who ultimately falls a victim to pulmonary phthisis is vulner-able in another direction; attacks of catarrhal pneumonia follow each other, and lead to caseation, and thence to miliary tuberculosis. Dr. Hamilton's expression for the same fact is, that these subjects have an undue susceptibility to prolifera-tion of epithelium, which in its turn leads to accumulation and stagnation, then to obliteration of groups of air vesicles and other changes which he has so clearly described, and so to caseation. But I want to know more intimately (said Dr. Gairdner) what is this "vulnerability" or morbid susceptibility? There is not a man in this room who is not in a certain sense vulnerable. Most of us have had catarrhs at one time or other; many of us, perhaps, have had them often and severely. Now I notice in practice that there are catarrhs and catarrhs. Some men have them rarely and mildly. Others have them severely, but they never extend beyond the larynx. None of these, it may be, are in danger of pulmonary tuberculosis, but they are all, more or less, vulnerable. But there are patients in whom almost every catarrh settles down instantly upon the chest; and here again I notice a new distinction. There are a considerable number who are thus vulnerable, who go on from boyhood to manhood, and from this to old age, wheezing and expectorating at intervals, and at times suffering pretty severe dyspnœa; some of them are rarely quite free from catarrhal symptoms for years together, and we call them asthmatics; but, after a time, if not at first, we get to know that they are not likely to fall into tuberculosis, but will certainly, if they live, become the subjects of pulmonary emphysema, and probably dilated heart. The others I referred to who are also vulnerable, though in a different sense, can scarcely suffer

one or two attacks of pulmonary catarrh without its becoming evident that the apices are unduly involved, and sooner or later dulness on percussion and other signs disclose themselves, and the case goes the way of a more or less chronic phthisis. The following is a case which I am confident every practitioner will recognise as one within his experience, although he may not always be able to ascertain all the facts with rigid accuracy. A child or a young person may have no complaint of the chest at all; and the most careful scrutiny may fail to detect any liability to catarrh—any vulnerability, in short. But from quite another side (say the brain or meninges) the case is suggestive of tubercle, and you make an examination. There, at the very apex of one lung, possibly of both, you find the inevitable dulness on percussion, the harsh or hollow respiration, and perhaps just a minute click or two of râle confined to that single spot; all the rest of the lungs being apparently sound. Why should that spot in this child's lung caseate, with a catarrh absolutely insignificant? And why, on the other hand, should a certain number of persons, eminently vulnerable to catarrh, escape caseation? Suppose that the child belongs to a family of which many have been cut off by phthisis, while the emphysematous and asthmatic subjects have had ancestors who died chiefly of cardiac disease, apoplexy, aneurism. Should I not be justified in assuming that a tuberculous predisposition existed in the one class of cases and not in the other? Again, let us revert for a moment to the case of "phthisis ab hæmoptoe." I produced that case to you because it was, more than any recent one within my experience, capable of being accommodated to the theory of miliary tuberculosis occurring as the result of caseation and ulcerative cirrhosis, which *may* (for aught I know) have sprung directly from blood detained in the pulmonary alveoli, or aspirated back into them from the bronchi. But in how many instances do we all know of blood being so impacted in the lung, and yet no caseation? Why do the hæmorrhagic condensations of mitral stenosis, and of pulmonary embolism, almost never caseate or give rise to tubercle? Why did the blood in this lung (showing a drawing), pumped into the bronchi and then aspirated from an aneurismal sac, so impacted that it led to dense lobular condensations, many of which were undergoing a peculiar grey degeneration, obviously requiring much time— why did this blood and this lung escape caseation and tubercular disease? If hæmorrhage in the lung is as apt to lead to inflammation and caseation of the surrounding tissue as Niemeyer supposes, why does it in cases of heart disease or

embolism so frequently undergo degenerative changes—fatty, suppurative, gangrenous, and other, but never, so far as I have observed, caseation or anything resembling it? And why does an old apoplectic cyst in the brain never caseate or lead to miliary tubercle either of the meninges or elsewhere? Blood is extravasated every day in every region and tissue of the body, as the result of injury, for example, or of purpura, or of scurvy, and we very rarely hear of its being followed by inflammation in any such sense as to produce either suppuration or caseation; and yet, when a young man, perhaps with a bad family history, has hæmoptysis as a first symptom and phthisis follows, we are told to believe it is because of the strong tendency that blood drawn into the lung has to excite inflammation there, and thus to lead to caseation, and in due course miliary tubercle. I incline with Laennec to think that this view of the sequence of events is rather more difficult than the opposite, and that it is easier to suppose, not perhaps that actual tubercle is necessarily there beforehand, but that when caseation or tubercle follows a hæmoptysis, there has been usually some previous constitutional infirmity, which I will continue to call, provisionally, a tubercular predisposition, one effect of which has been to weaken or disturb the pulmonary circulation, and so lead to hæmoptysis, and then to phthisis. But this is only a clinical and practical view, till the pathologist comes and speaks the last word, and tells us finally what tubercles are, and what a tubercular predisposition really signifies.

ADJOURNED DISCUSSION—*8th March.*

DR. FINLAYSON said that, in common with the other members, he had listened with much pleasure to Dr. Hamilton's exposition of his views, and he admired the clearness with which they had been put before the Society. This clearness was no doubt partly due to the fact that Dr. Hamilton was expounding the views which he had formulated after much personal investigation, and also no doubt to his training and practice as an expert teacher. But there was reason to fear that the clearness was also due in part to the very arbitrary distinctions and definitions which he laid down at the beginning of his remarks, and to his ignoring some very important facts bearing on the question at issue.

His definition of what he proposed to term tubercle appeared very arbitrary; and his definition of phthisis pulmonalis seemed

even more unsatisfactory, excluding, as he stated it did, something like one half of the cases regarded as phthisis by hospital physicians during life, and probably also so regarded after the inspection by many of them at least. These points, however, Dr. Finlayson would prefer to leave to professed pathologists, and they would no doubt receive attention that night. He must, however, protest, as a physician, against the definition given of phthisis pulmonalis, not merely on the etymological and historical grounds urged by Dr. Gairdner, but even on the narrower ground of its forming a distinction between local lesions which were thus unwarrantably separated from each other. [Dr. Finlayson here showed the lungs of a woman who had recently died with enormous irregular cavities in both, and with localised pneumo-thorax, as an illustration of what was deliberately excluded by Dr. Hamilton's definition of phthisis.]

It might be asked why he ventured to take part in this discussion if he were not a professed pathologist. He did so with some diffidence, but he felt that the issues raised involved something more, something much greater, than mere questions of histology. Moreover, his attention had been somewhat specially directed to the subject soon after he entered on practice, and ever since 1868 he had been anxiously considering the relationship between phthisis and tuberculosis. About that time his attention was first called to the allegation that in tuberculosis, with the well known grey granulations, there was always some pre-existing cheesy deposit or similar condition; and at the same period he had begun to try to discover whether careful thermometric observations might help the discrimination of cases of tubercular and non-tubercular phthisis. Since then, both by observation and reading, these objects of inquiry had been kept pretty steadily in view. In the earlier part of his experience in Manchester, his cases were almost exclusively those of children, in whom the evidence of miliary tuberculosis, when present in a pronounced form at least, was usually plain enough to the naked eye; in the latter part of his experience he had had the benefit, almost invariably, of Dr. Coats's presence at the *post-mortem* examinations. The conclusion arrived at was this, that although in the great proportion of cases of miliary tuberculosis some cheesy mass or similar lesion could be found, there was a residuum of cases where no such thing was discovered even after a careful search; and indeed in some of the cases where it was discovered the mass was so small and apparently insignificant that it seemed hard to blame it for the tuberculosis, as many such lesions

were often found without any tuberculosis being present. With regard to the discrimination of cases of phthisis, by means of the thermometer, into tubercular and non-tubercular, he had failed completely, as others had also failed, to obtain any reliable distinction.

But the real point which had urged him to open this adjourned debate was the promulgation by Dr. Hamilton of the extraordinary doctrine that neither tuberculosis nor phthisis pulmonalis should be regarded as hereditary.* Now, Dr. Hamilton was much too skilful a supporter of his views to have dragged this opinion before them unless it had a vital bearing on his doctrine. To him phthisis pulmonalis is but a catarrhal inflammation, such as any one may take at any time, going on to the destruction of the upper portions of the lungs, for mechanical reasons which he expounded with much ingenuity; and the lungs are only saved from destruction in a multitude of other cases by the accidental coincidence of mitral disease or renal disorder, which, by keeping them moist, prevent caseation. If all this were so, of course there is but little room for hereditary influence. But the facts were too strong even for Dr. Hamilton; for he no doubt knows as well as any one that the hereditary tendency to phthisis is one of the facts of clinical experience most firmly established. He resorts, therefore, to a mystification of words; phthisis being the destruction resulting from the caseation of the proliferated epithelium of a catarrhal pneumonia, he alleges that the patient has no hereditary susceptibility to phthisis as such, but that there is an inherited susceptibility to catarrhal inflammation and to an excessive proliferation of epithelium; and this leads, in weak or predisposed subjects, to caseation and phthisis! Such distinctions are surely out of date at this time of day, both in science and philosophy.

This might be said to be the weakest part of Dr. Hamilton's speech, but there was, if possible, one part weaker still, and that was the reason he gave for phthisis and tuberculosis being non-hereditary, for, he said, you do not get them in a new born child. It is probable that he meant that they were *never* found in such; for it appears that he does not mean to exclude infantile syphilis from hereditary diseases, although the manifestations of this disorder are usually delayed for some time after birth.

But is it true that phthisis and tuberculosis are never congenital? The earliest age at which Dr. Finlayson had

* Dr. Hamilton, in revising his notes for publication, has somewhat modified the language here criticised.—ED. *G. M. J.*

verified the existence of phthisis pulmonalis by *post-mortem* examination was in a baby six months old; but this child was said to have had a cough since birth; the lung disease had not apparently been advancing very rapidly; it could just be recognised at the apex of the left lung during life, and death was occasioned, not by the advancing pulmonary mischief, but by an attack of basilar meningitis. In the upper part of the left lung, cheesy deposits were discovered; some of these had softened and formed a distinct cavity. In this case the pulmonary mischief must surely have begun at a very early age. He had made no search into the literature of this subject; but in Gerhardt's *Handbuch der Kinderkrankheiten* (Bd. 3, Hft. 2. S. 787, Tüb. 1878) there are cases given at much younger ages by several observers; and one case in particular proving fatal at the twelfth day of life, with cheesy masses and cavities, varying from the size of a pea to that of a peach stone, is there given. As the author says, it may well be reckoned that these lesions were at least, in part, of intra-uterine formation; so that Dr. Hamilton's extraordinary test breaks down completely. With regard to tubercle, we find in the same book (Bd. 3, Hft. 1. S. 170) that it is stated by Fränkel, of Berlin, on the authority of an oral communication, that congenital tuberculosis was seen on one occasion by Virchow himself.

But even if these cases had not been recorded, or had been overlooked here, what is the value of the reason given by Dr. Hamilton for denying the hereditary nature of phthisis? Is nothing hereditary unless congenital? Surely we may fairly believe that tallness and obesity are often hereditary, although, to use his own words, they are "practically unknown" in new born children. Or, if exception be taken to these as not being pathological conditions, what of gout? Surely we have here a disease notoriously hereditary, and also notoriously late in developing the signs of its presence; so much so that it is seldom found till many years after the full adult age.

In conclusion, Dr. Finlayson said that, in his opinion, both phthisis and tuberculosis were closely allied to that constitutional state in which scrofulous disease in its various forms was found. Phthisis, tuberculosis, and scrofula were so mixed up, both in the personal and the family history of our patients, that the tendency to these had to be regarded as practically identical. The tendency to such diseases was often strong, and bound to manifest itself in some way, but in other cases it was no doubt much less pronounced; and just as mechanical accidents to such persons might determine serious disease in

the joints and bones, although they would be trivial in a sound subject, so a slight catarrhal pneumonia, or the overstimulation of the youthful brain, might lead, in such predisposed subjects, to destructive disease of the lung, or to fatal meningitis.

DR. SCOTT ORR said—I regret that I had not the privilege of being present on the first night of this discussion, and so did not hear Dr. Gairdner's or Dr. Coats's papers read. I had, however, the advantage of listening to the speeches delivered at the last meeting, and certainly I heard with great interest that of Dr. Hamilton. It was clear and lucid, and apparently most convincing; founded on carefully observed facts, which, to himself at least, appeared to be incontrovertible. But if I listened with so much pleasure to his remarks, I heard with no less pleasure and interest those of Dr. Gairdner, which, to my mind, contained a full and complete reply. Dr. Gairdner professed to speak with diffidence, because of late years he had not been so much engaged in pathological investigations as formerly; but I think he spoke from a standpoint of pathological and clinical experience which few of us can pretend to.

If he so spoke, it also becomes me to speak with reserve, seeing I have neither the minute pathological nor microscopical knowledge which those gentlemen who originated this discussion have attained to.

I desire, therefore, to speak from the physician's point of view. I have nothing new to offer, but rather wish to revive old doctrines which, though old, are not behind much of the teaching of the present day.

Dr. Hamilton stated that, invariably, previous to the formation of tubercle, a deposition of caseous matter takes place in some part or organ of the body, and that the system becomes infected by this matter, and as a result, we have tubercle.

Now, I would ask, Are caseous matter and tubercle the same? I believe it is generally admitted that they are not; and yet without the one, the other is not, according to Dr. Hamilton. This does not appear to me to be a very scientific theory, unless the caseous matter be regarded as the first stage of tubercle. Both Drs. Finlayson and Foulis have successfully replied to this doctrine. The latter says:—" It might be said that the caseous material was the original starting point of the disease, but it was not enough to say so; for how many cases were there not in which caseous masses failed to infect the system; while, on the other hand, it could hardly be denied that there occurred instances of acute tuberculosis

where a minute inspection of the body failed to reveal the existence of caseous masses."

A much more rational theory to my mind seems to be, that a low state of the system, with hereditary predisposition, producing deterioration of the blood, determines the production of tubercle. This low state is essentially present where caseation has taken place, and it is this state probably, (for it must be remembered that we are dealing entirely with probabilities), and not infection, which produces tubercle. Any disease which lowers the vitality, and deteriorates the blood, will, if there is predisposition, produce tubercle, and in this view I entirely agree with Dr. Gairdner.

But even inflammation will produce this state. This was the doctrine of my late venerable teacher, Dr. Alison, and it is chiefly to refresh the memories of those who have read his papers in the *Edin. Med. Chirurg. Trans.*, vols. 1 and 3, and direct the attention of those who have not, to them, that I have ventured to speak to-night. He dwelt specially on the difference between healthy and tubercular inflammation. In the former, occurring in healthy people, there resulted pneumonia and the products of healthy inflammation; in the latter, requiring the hereditary taint, which Dr. Hamilton altogether ignores, there is tubercle. This taint is an essential principle in Alison's theory, with it we have tubercle, without it healthy inflammation and its results. What clinical physician is there of any experience who will give up the doctrine of hereditary predisposition in such cases? Alison used to illustrate his views by relating the case of a boy who received a severe injury in the *lower* part of the chest, and ever afterwards was affected with cough and dyspnœa. He was suddenly cut off by confluent small-pox, and on inspection a mass of tubercular deposit was found at the seat of the injury, while the apices of the lungs, the usual site of tubercle, were free from the deposit.

Then, again, we were told by Dr. Hamilton that gravity and dryness of tissue had to do with the deposition of caseous matter, and therefore the apex of the lung was its favourite site, tubercle being subsequently developed in the lower parts of the pulmonary tissue, and if I mistake not, that they did not intermix. This appears to me to be reversing the sequence of events, my belief being that the disease begins by the deposit of tubercles which coalesce, then by the continuance of the low, slow, interstitial inflammation already described, caseation, breaking up, and destruction of lung tissue follows.

But it is known that irritation of any kind, particles of dust, glass, coal, steel, &c., will produce tubercle, caseation, and

phthisis. How does it do so? I answer, by producing this low form of inflammation.

The *giant cell* has been much dwelt upon, and by some has been thought to be present in tubercle always; in short, has been considered pathognomonic of it. Are there giant cells in these last instances? Alison tells us that Cruveilhier injected mercury into the femoral artery of a dog, and Dr. Kay of Edinburgh into the tracheæ of rabbits, and they became phthisical with thousands of miliary tubercles in their lungs, pronounced to be so by the most competent observers of the day, who were not aware how they had been produced. In each tubercle there was a *giant cell!* but it was a minute globule of mercury! In explanation, I beg to quote the following from Dr. Alison's papers:—

" It may be said that if this kind of irritation, acting on the lungs of healthy rabbits, is supposed to produce a deposition of tubercles, resembling those which we distinguish in the human body as scrofulous, we depart from the doctrine generally received among physicians, and illustrated in the former part of this paper, that a peculiar general scrofulous diathesis is much concerned in the production of tubercles in the human body.

" I would answer, 1st. That if it be true, as matter of fact, that mechanical irritation of the lungs will produce deposits in the lungs, not differing in appearance from scrofulous tubercles in their early stages, we must not set aside that fact because it does not accord with our preconceived notions of the pathology of the diseases in which similar deposits take place in the living body.

" But, secondly, it was stated already, as the result of the observations of Andral, that the conditions which appear most requisite, in order that inflammation may generate tubercles in the living body, are the *long duration* and *slight intensity* of that inflammation. It is highly probable that the scrofulous diathesis disposes inflammation to terminate by tubercular deposition, simply by giving it these characters—keeping it up long, and not permitting it to rise high."

DR. M'CALL ANDERSON remarked that, in discussing the pathology of phthisis there was a tendency to take rather too narrow a view of the subject. We must remember that pathology is the knowledge of disease, and that as Wagner has remarked, the materials of it are chiefly derived from four sources:—1st. Observation at the bedside; 2nd. Experimentation; 3rd. Pathological anatomy; and 4th. Pathological chem-

istry. At the previous meetings he thought pathological anatomy and experimentation had been fully dwelt upon, whilst the others, and especially observation at the bedside, had not had sufficient prominence given to them.

In speaking of tubercle, he wished it to be understood to-night that he meant grey miliary tubercle; not that he wished thereby to imply any theory on the subject. Indeed, he held that there is a very close connection between caseous deposit and grey miliary deposition. He believed that four kinds of phthisis may be admitted:—1st. Acute tuberculosis, where the lungs are more or less thickly studded with grey tubercles; 2nd. Pneumonic phthisis, where the disease commences with inflammation, generally a low form of catarrhal pneumonia, and goes on to caseation, and too often to excavation; 3rd. Pneumonic phthisis becoming secondarily complicated with tubercles; and 4th. Fibroid phthisis. An important question now arises—Can we say during life which of these forms we have to deal with? In some cases it is absolutely impossible, in some we can form a strong suspicion, and in some we can say definitely which variety is present. Let us take them seriatim. 1st. *Fibroid Phthisis.* Taken overhead, this is the most chronic of all the forms. It is associated with far less marked general symptoms; indeed, in some they are almost entirely absent. In this form, too, although on making an examination of the chest the physical signs of dilatation of the bronchial tubes may be mistaken for excavation, still there is not the same tendency for these bronchiectatic cavities to occur at the apex, and there is contraction, with falling in of the chest wall, and perhaps displacement of other organs, especially the heart, which is not observed in other forms. In phthisis with cavities there often is falling in of the chest wall no doubt, but this is due to fibroid change in the lung tissue between the cavity and the chest wall. There is, therefore, little difficulty in saying that a patient has fibroid phthisis, or at least that there is a fibroid element in the case. 2nd. *Pneumonic Phthisis.* The usual history of such a case is this:—The patient, after exhibiting for a variable time dyspeptic symptoms, has a short dry cough, and with this he gradually loses flesh and strength, sweats a little at night, and is perhaps a little feverish. On examination of the chest we find gradually developed consolidation of the lungs, usually at one or both apices, ending too often in the formation of cavities. This is the ordinary pneumonic phthisis; the one which is much the most frequently met with in practice. 3rd. *Pneumonic*

Phthisis Complicated Secondarily with the Development of Tubercles. Can we know in such a case when the tubercles make their appearance? In a great many cases they give rise to no special symptom; but in many they do, and if all of a sudden the patient rapidly loses flesh and strength, has profuse perspirations, high fever, perhaps lividity of the lips, great rapidity of respiration, and if, on examining the lungs, no physical signs evidencing increase in the disease are found, then we have reason to suspect that the development of tubercle complicates the case. We can affirm this in a chronic case; but can we tell if the case is one originally of acute pneumonic phthisis, one of the forms of galloping consumption, and probably the worst form of all, because it produces such widespread and rapid destruction of the lung tissue? It is virtually impossible for any one to say during life that tubercles have become developed, for the symptoms of the tuberculosis are overwhelmed, so to speak, by those of the acute pneumonic phthisis. 4th. *Acute Tuberculosis.* In many cases there are no symptoms at all during life. Pathologists know that in making *post-mortem* examinations true tubercles are often discovered in various organs and tissues, which were not suspected, and which gave not the slightest evidence of their presence during life. But the tendency, when tubercles are present in any numbers in the lungs, is for the disease to give rise to the development of acute symptoms. Can we during life suspect that we have to deal with acute miliary tuberculosis? Not positively, but we can form a shrewd suspicion. If a patient becomes very ill with high fever, rapid loss of flesh and strength, profuse perspirations, lividity of the lips, and very rapid breathing, and on making an examination of the chest the physical signs are very slight, then we have reason to suspect it is a case of acute miliary tuberculosis and not pneumonic phthisis. Dr. M'Call Anderson concluded by saying that he thought there was a tendency now for physicians to be dominated too much by pure pathologists, and if this was submitted to, serious errors might creep in; and one of these had been alluded to by Dr. Finlayson, that phthisis is not hereditary, a statement which no clinical physician could make. The physician must at times assert himself, and not allow himself to be overridden by the pathologist. Indeed, there seems fully as much reason now for the warning, which was given by Trousseau a good many years ago, who said, "For heaven's sake, gentlemen, let us have a little less science and a little more art."

DR. ALEX. ROBERTSON said :—In view of the thoroughness and ability with which this subject has been discussed at our successive meetings, and of the fact that, although my field of observation of phthisis in all its forms is a wide one, I have not made it a special study, I rise to occupy your time with considerable hesitation. Probably, I should not have done so at all, had it not appeared to me that, upon the whole, the weight of opinion, so far as the discussion has gone, was in favour of the doctrines of Laennec and the French school generally ; and these doctrines, I am convinced, have in the past exerted an unfortunate influence on medical practice. But while that is my conviction, I do not wish to speak dogmatically, as I doubt if our knowledge of phthisis is so far advanced as to warrant a positive conclusion respecting its pathology.

Putting it concisely, the question before us I conceive is this : Is tubercle, and especially phthisis pulmonalis, usually the product of a special morbid state of the blood, or is it a development from a mere local inflammatory effusion ?

I will at once say that my opinion is, that in *most* cases tubercle is of local origin, and arises from the products of inflammation which have caseated and softened, and been taken up by the lymphatics or blood-vessels, in the former case giving rise to a local, in the latter to a general tuberculosis. In supporting this opinion, I shall avoid, as far as possible, reiterating statements and arguments which were so well put before us by Dr. Hamilton—the views, in short, of the German school, in which, however, they were distinctly anticipated by our own Dr. Addison. I shall confine my observations to the objections which have been urged against these views, and particularly those which occur to the experienced physician.

Dr. Gairdner stated as a difficulty that occurred to him, the fact that bronchitis continues year after year, and advances to its fatal close without the development of tubercle or phthisis —a case than which there is none more common in medical practice. I understand the inference from this statement to be, If phthisis is of inflammatory origin, why do not such cases of bronchitis terminate as phthisis? Dr. Hamilton attempted to meet this difficulty by stating that œdema of the lungs resulted, and prevented the development of caseation, which was the antecedent of tubercle. This explanation is only partially satisfactory ; for in very many cases of bronchitis, even of long standing, there is no œdema of the lungs. How then are these cases to be accounted for ? I believe by

the very simple explanation that the inflammatory action does not generally extend to the minutest bronchi and air cells. Should it implicate them the patient is in danger of becoming phthisical, even though the constitution has previously been good, and free from hereditary bias. Of course, if the patient be of weakly constitution, and particularly if disposed to low chronic forms of inflammation, such as we see in the skin in scrofulous people, besides inheriting the consumptive tendency, the danger is increased many fold. Further, inflammatory products in the alveoli and minute tubes block them up, whereas those formed in larger tubes are got rid of by expectoration. So long as the alveolar wall and interstitial structures remain comparatively healthy, these products may be absorbed, but if these parts are materially involved by the inflammatory process, there is no absorption, and caseation is the ordinary result.

Another difficulty is—patients frequently come before us without history of preceding bronchial inflammation, but simply of failing general health, with perhaps slight cough, on examining whom, distinct evidences of phthisis are found at the top of one or both lungs. How are we to account for such cases on the inflammatory hypothesis? As a rule, in these patients hereditary influence is well marked. But what does heredity imply in cases of that kind? Simply that the lung tissue, *more especially*, is under the proper standard of vital power, this being accompanied by other evidences of low vitality of the system generally.* And it is held that the apices of the lungs are more fixed, and do not expand so freely as lower parts, also less readily get rid of inflammatory products, and that their nutrient supply is not so good as that of the remaining portion of the lungs. From some cause, such as cold and damp to the skin, there is an afflux of blood to the internal organs. This quickly passes away except from the constitutionally weak parts. There it remains and originates

* An example from another department of pathology will illustrate what I consider to be the action of heredity in phthisis pulmonalis :—Insanity is a highly hereditary disease. The inheritance is a local weakness of tissue—namely, of the hemispherical ganglia : there is no morbid condition of the blood in this case. And it is to be observed that other parts of the same tissue, directly continuous with these ganglia—basal ganglia, nutritive centres, and spinal cord, are in a very large proportion of cases quite free from disease. So in hereditary phthisis pulmonalis there is congenital weakness, particularly of the extreme parts of the pulmonary tissue, and a conseqnent disposition to take on at the weakest point (the tops of the lungs) an insidious form of sub-inflammatory action. Along with this, as I have said, there is usually a general low vitality of the system.

a sub-acute low form of inflammation, the products of which, along with the lung tissue caseate, soften, and give rise to tubercle. This, I think, is probably the course of events in many cases of hereditary phthisis. The difficulty we have been considering seems to me less easily explained by the theory of the French school, that there is a special blood dyscrasia in all cases, or, as Dr. Coats puts it, that there is a special virus in the system; for, seeing that the blood circulates everywhere, Why should the tops of the lungs be the only parts to suffer in the first instance? Does that not point to a local weakness of tissue?

Another objection relates to pulmonary hæmorrhage. It is urged that, for example, in cardiac disease blood may be effused into the lung, condensing its tissue, and yet does not caseate nor give rise to tubercle. There seems, however, no good reason to anticipate that result in such cases. For blood is one of the blandest and least irritating of fluids, so long as it is not in contact with an inflamed surface or mixed with air. In portions of lung condensed by it the air is usually thoroughly expelled, and comes in contact with the blood only in the bronchi leading to the condensed part, and there probably a protecting film is formed. Should the air get mixed with the blood decomposition is apt to set in, giving rise to severe inflammation, and even suppuration or gangrene. In these cardiac cases the walls of the air cells and the surrounding tissues being free from inflammation, and the lung not being constitutionally weak, no irritation is produced, and the sanguineous effusion may be gradually absorbed. On the other hand, in patients with weak lung tissue and a hereditary bias to consumption, low inflammatory action precedes the hæmoptysis, and occasions it through the attending congestion, and it follows that the blood that condenses the lung at the part where the disease begins lies in contact with an inflamed surface, and both participates in and accelerates the morbid changes that are progressing there—changes that end in caseation. Should there be no preceding inflammatory action, it is easy to see that blood, though not irritating to strong lung tissue, may be so in one that is constitutionally weak, and initiate disease in such.

The greatest difficulty that I have is to explain certain cases of acute general tuberculosis. Most cases of that kind are readily enough accounted for when we find caseated glands or caseated matter in walls of cavities or anywhere, as its absorption by the blood-vessels shows how the system as a whole becomes involved. But there are cases met with where no

caseated matter can be found; how do they arise? It may be in persons with strongly pronounced heredity, from the absorption of tuberculous matter in the atmosphere, when near some phthisical person while coughing, or that the blood in such persons spontaneously acquires the condition which is generated by the introduction into it of caseous matter in ordinary cases.

I stated at the outset my belief that Laennec's theory had exerted an evil influence on practice. Being of opinion that the state of the blood is the primary and chief morbid condition, and holding the disease in the lungs to be a mere local expression of that condition, practitioners, it is to be feared, have been led in many instances to give almost all their care to the former, and little heed to the latter. But when the physician considers phthisis to be a consequent on inflammation, the local morbid process receives his assiduous attention, and unquestionably in many cases a great deal of good can be effected by local treatment. At the same time, being well aware that heredity and a feeble constitution are present in most cases, he neglects no measure which is likely to strengthen the system, and obviate, as far as possible, the influence of the morbid disposition which has been inherited.

DR. BARR said—Assuming that acute miliary tuberculosis might be due to the absorption of inflammatory products which have undergone caseous metamorphosis, he would suggest that, in many cases, the source of this infective material might be caseous accumulation in the osseous cavities of the ear, known as the mastoid cells. In chronic inflammations of the middle ear, we have these cells filled with purulent secretion and epithelial *débris*. These purulent diseases go on for years, and in time this secretion and *débris* become dry, and undergo, undoubtedly, a caseous change, and often after the otorrhœa has stopped for some time, on examining these spaces this caseous material is found. Now, the veins may convey the effete matters from the mucous membrane lining these cells, and as they pass into the sinuses of the skull, a connection is thus formed with the pulmonary tissue through the jugular vein; so that, if it is made out that tubercle may arise from caseous material, this is a probable source of it. Von Tröltsch related three cases of acute miliary tuberculosis, and in all three he found, on examining these cells, that they were filled with this caseous accumulation, all being due to long continued chronic inflammation of the middle ear.

DR. JOSEPH COATS closed the discussion with the following remarks :—With several of those who have already spoken, I regret that Dr. Hamilton is not present to-night, as it will be expected that I should more particularly refer to his views. I confess that Dr. Hamilton spoke with a clearness and a confidence concerning the morbid processes in phthisis which I am very far from using; nor do I think would any other pathologist in Europe have spoken with the same dogmatic certainty. In phthisis the problem is an exceedingly complicated one, the disease being found in a great variety of stages in each case—at one part only beginning, at another more advanced, and at another more advanced still; so that you are able to get, from a phthisical lung, almost anything. When I began pathological study, my reading led me to a position almost identical with that which Dr. Hamilton has taken up, and I thought that, to a certain extent, I justified that position by observation on the dead body; but I have been driven from it by the evidence of facts which have come under my observation.

There is one important point in which I agree with Dr. Hamilton. He states that tuberculosis results from a virus; he states it most definitely, and further says that it is a very irritating one. That is a most important step in advance, and it is a position which most modern pathologists are prepared to accept. What are the effects of this virus? I would refer to this lung which Dr. Finlayson has shown already. In it we have the cirrhotic form of phthisis, with no caseous material. The cavities, if you examine the more recent of them, are obviously forming by dilatation of the bronchial tubes. I found, in making a section of one of these lungs, that I cut into a small cavity not larger than a pea, which formed a bulbous expansion of a small bronchial tube. A cavity, we may say, just formed, or in process of formation. After hardening in spirit, I made a section, so that I could trace the wall of the bronchial tube into the cavity, and also observe the lung tissue around. I found in the wall of the cavity signs of extreme irritation, masses of inflammatory cells, and of proliferating epithelium. Outside that I found a great inflammatory new-formation in the lung tissue; but I found more, undoubted tubercles with all their characteristics, giant cells, &c., here and there, in this inflammatory tissue. In this case an irritant had been obviously acting on the wall of the bronchial tube and on the lung tissue, and had produced the inflammatory tissue and the formation of the tubercles, and was thus the cause of all these processes.

I think Dr. Hamilton would admit that, and would say these tubercles were due to the virus, but he would deny that this is a case of phthisis, and for no reason that I can see, except that there is a tubercular virus present.   Here, then, we have a virus causing processes which lead directly to the formation of cavities.

Let us now take the case of an advanced caseous phthisis, where there has been abundant breaking down, and where there has been so much caseation that abundant virus must have been produced.   In such a case, if you examine the peripheral parts, catarrhal products are found, such as Dr. Hamilton refers to, and you find these products caseating. Do you find that tubercles are met with only at a distance from and secondary to the caseating products ?   This is what Dr. Hamilton would lead us to believe.   But I must state, in the most definite manner, that along with the caseating products you find tubercles; side by side with, and in the midst of, caseating catarrhal products, there are caseating tubercles. I deny that tubercles only occur in the third or softening stage of phthisis; they are abundantly present as part and parcel of the process of caseating catarrh.   It is surely natural that a virus produced in such abundance should cause, at one and the same time, catarrhal inflammation and tubercles.   Dr. Hamilton states that, in these lungs, the epithelium is peculiarly susceptible.   Does this virus not produce the inflammatory products as well as the tubercles ? My belief is that the virus, acting on the lung tissue, produces the catarrhal products, induces their caseation, and produces the tubercles.   And, further, it is not only along with *caseating* catarrhal products that we meet with tubercles; we meet with them along with catarrhal products before caseation. Many facts bear out this.   And now it may be asked—Is it not likely that this virus (still referring to the case where abundant virus is produced) may sometimes cause catarrh without tubercles ?   Is it not likely that a virus acting less vigorously may produce what is a simple catarrh to our eyes, and alongside of it no tubercles ?   That is exceedingly possible; but I would say that if you have a virus producing catarrhal products, the chances are that, if you search further, you will find at other points a catarrh with tubercles; and this is my universal experience.   So that, although the two are not in every case concomitant, yet they are due to the same irritant.

In all this I have spoken of the effects of the virus where there is an undoubted source of it—where there is undoubted

breaking down of caseous material. I should like now to ask, Is the process different at first? When phthisis begins is there something different? I fail to see that there is a particle of evidence to show that. If the process is different to begin with; if the catarrhal pneumonia breaks out without the irritation of the tubercular virus, then what is the irritant which produces this catarrh, and this caseation of the catarrhal products? I regard the caseous change of the catarrhal products, involving as it does the necrosis of the lung tissue, as a most important process, and one not explicable on any doctrine simply of defect of the system, or of any accidental loss of fluid.

We come now to the very important question of the origin of this virus. Supposing it is decided that phthisis is due to a tubercular virus, Where does it come from? Does it come from caseous material in some part of the body, or from the outside? Let us first take the case of other forms of tuberculosis. In general tuberculosis we have undoubted effects of a virus, but as to where it comes from I simply answer that I do not know. One thing is certain, it does not always come from caseous products; in every case of general tuberculosis I have seen, I have examined carefully for caseous products, but I have by no means always found them; and I believe this to be the universal experience of pathologists.

Take again the case of the brain; we meet with a local tuberculosis of the brain, but where the virus comes from I do not know. It certainly does not come from a caseating centre so far as I can discover. Or take the kidney; Dr. Hamilton constructed a theory of its origin in the kidney which I can by no means subscribe to; here again I do not know the origin of the virus. Take again tuberculosis of the joints; this is a most important point. Strumous disease of the joints is undoubtedly tubercular, abundant miliary tubercles being found in the altered structures. In a case I met with recently, a case of Dr. Geo. Buchanan's, there was enormous enlargement of the synovial membrane, so great was it that at first it was doubtful whether it was not a tumour. I found in it tubercles in immense numbers, but not a trace of caseous material. In ordinary cases of strumous disease of the joints you do find caseous material, for the inflammatory processes and the tubercles have produced it, but in this case there was not a trace of caseous material. I do not know where the virus came from in this case either. And now to return to phthisis pulmonalis; the virus, both in the cirrhotic and in the caseous

forms, I think undoubtedly comes from without, and is carried to the lungs mainly by the bronchial tubes.*

In this reference I would venture on some views which may be regarded as too theoretical, but something of this kind seems to be necessary for a proper elucidation of the subject. We cannot accept any theory of phthisis which does not take into account a state of the system as predisposing to it. On my fingers at the present moment are three swellings which I may call pathological spots, due doubtless to the virus acquired at *post-mortem* examinations. The virus has affected the skin, and it or its products have passed up the lymphatics and affected a gland above the elbow, which is enlarged and painful to the touch. The virus or its products have entered the blood, for I am at present generally out of sorts. Every spring I have a recurrence of these pathological spots, and only in spring; and though all winter I make examinations and expose my hands to the virus, it is only in spring that the virus takes effect. There is some state of the system in the spring, perhaps connected with the long work of the session, which renders my skin peculiarly susceptible to the cadaveric virus. And so in phthisis I would say there must be some susceptible state of the system before the virus will take effect. It seems to me that we must acknowledge that this virus is abundantly present in the air, ready to develop itself in a particular state of the system; but I would say this further, neither a state of the system nor a virus alone is enough to account for the effects. That a state of the system is not sufficient to account for tuberculosis is abundantly evident in cases of acute general tuberculosis. I have seen a strong muscular man with no lack of adipose tissue die within a few weeks of this disease; evidently a virus of the most active kind. Dr. M'Call Anderson has referred to a warning that should be given of not accepting pathological theories without a sufficient basis; but I would return a warning, and say that physicians are perhaps liable to take too much the appearances during life into account. And in this reference I would say that pathology undoubtedly points to a virus as the cause of phthisis, and clinical facts point to a state of the system as at the bottom of it. We have to accept both, and my belief is that this position will be that of the immediate future.

* The recent very suggestive remarks of Cohnheim on the probable source of the virus in acute general tuberculosis, and the various local forms, are not specially referred to here. These remarks point to the direction in which future observation may be made, but are not to be taken as a dogmatic statement of ascertained facts.

Dr. Gairdner, from his experience as a pathologist, was interested in the remarks of Dr. Coats. In 1851 he was greatly disabled by the pathological virus. He had at that time a succession of boils—150 or 200, at different parts of his body. After going abroad without much benefit, he was led to give up pathology as a special branch of study. While before that period he was only occasionally and temporarily subject to such attacks, it is remarkable that ever since then, if he merely handled pathological products, he was liable to an occurrence of pathological spots. So that here a special susceptibility to the virus had been induced by the virus itself.

ORIGINAL ARTICLE.

THE DIFFERENTIAL DIAGNOSIS OF A CASE OF EPILEPTIFORM CONVULSIONS.

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(*Being a Lecture delivered in the Extra-Academical School of Medicine, Edinburgh, during the Summer Session, 1880.*)

(*Concluded from page 190.*)

Convulsions Resulting from (General) Meningitis.

For practical purposes cases of general meningitis may be divided into three great groups :—

1. Cases of meningitis resulting from traumatic injury, including under this head the suppurative meningitis, which follows bone disease.

2. Cases of typical, tubercular (basilar) meningitis.

3. Cases of meningitis which arise idiopathically, including cases of epidemic cerebro-spinal meningitis.

In all of these epileptiform convulsions may occur.

The *positive* facts in favour of general meningitis are :—

1. *The character of the symptoms.*—In many cases two

stages; the first of irritation; the second of depression, can be recognised. During the first or irritative stage the chief symptoms are:—Elevation of temperature; a quick pulse; headache; vomiting; intolerance of light and noise; contracted pupils; constipation; retraction of the abdominal muscles, causing the so called boat shaped belly; the *tache cerebrale;* delirium; mania; and *convulsions.* The second stage, corresponding to the period of effusion and compression, is chiefly characterised by a slow, sometimes irregular pulse; dilatation and sluggishness of the pupils; coma; and paralysis. Convulsions may also occur. Double optic neuritis is often developed towards the termination of this stage. In tubercular cases tubercles may occasionally be seen in the choroid.

2. The acute commencement and rapid course.

3. The presence of associated pathological conditions and causes, such as a wound; running at the ear; tubercular disease of the lungs, abdominal glands, &c., &c.

Intra-cranial tumours, uræmia, and lead encephalopathy are the other causes of convulsions which are most likely to be confounded with meningitis.

The negative facts of importance are, therefore, the absence of the *positive* symptoms and signs which characterise those conditions. (See pp. 187, 312, 311.)

The differential diagnosis of general meningitis and intra-cranial tumour turns on the same points, as have been already indicated in speaking of the diagnosis of local meningitis of the convexity. (See p. 190.) Elevation of *temperature* and positive *mental disturbances* (delirium and mania) are, when present, very suggestive of meningitis as against tumour.

In cases of sub-acute and chronic meningitis the difficulties are much increased, and it may be impossible to give a positive opinion. Fortunately for the credit of diagnosis, cases of chronic meningitis are rare. The numerical chances in these doubtful cases are, therefore, strongly in favour of tumour.

The Differential Diagnosis of the Different Forms of Meningitis.

Traumatic meningitis and its attendant convulsions can seldom give rise to difficulty. The history of a head injury; the presence of ear disease; the sudden onset and severe character of the symptoms; high fever, violent headache, vomiting, wild delirium, and severe convulsions, are usually quite distinctive.

Convulsions due to Tubercular Meningitis.

In tubercular (basilar) meningitis the onset of the symptoms is, as a rule, more gradual, and the symptoms less violent than in traumatic cases. Sometimes the onset is sudden, and the diagnosis can then only be made by watching the progress of events. The other points to be relied upon in the differential diagnosis of the ordinary forms of tubercular meningitis are :—

1. *The presence of a source of infection, i. e.,* a caseous gland; of similar (*i. e.* tubercular) disease in the lungs, abdomen, &c.

2. *The age of the patient.*—Tubercular meningitis is very much more common in children than in adults. In adults there is very generally associated lung disease.

3. *The absence of any of the other causes of meningitis, traumatic injury, ear disease, &c.*

4. The previous state of health of the child; the family history and hereditary tendencies.

5. The presence of associated tubercular lesions.

Epileptiform Convulsions Resulting from Epidemic Cerebro-spinal Meningitis.

In these cases there are spinal as well as cerebral symptoms —viz., pains in the extremities and trunk; startings or rigidity of the muscles of the extremities; paralysis or anæsthesia often paraplegic in distribution; tenderness over the spine; pains on movement, &c., &c.

In the epidemic variety the presence of an eruption is of some value, but the occurrence of similar cases in the neighbourhood is the only means, I know of, by which the *epidemic* is to be distinguished from other forms of cerebro-spinal meningitis.

Epileptiform Convulsions Resulting from Embolism.

The sudden cutting off of the blood supply from the motor convolutions, which is caused by an embolism of the middle cerebral artery or its branches, may be attended with epileptiform convulsions. The spasms may be limited, but are usually general in distribution. There may be no loss of consciousness. Paralysis hemiplegic in distribution, usually right sided* and accompanied by aphasia, is found to be present when the spasms cease.

* The right sided distribution is due to the fact that in the majority of cases the plug lodges in the *left* middle cerebral artery.

The *positive facts* in favour of the convulsions being due to embolism are :—

1. The sudden onset of the attack without previous symptoms or convulsions.

2. The fact that the convulsions are followed by paralysis, which is not temporary (epileptiform), but lasting.

3. The presence of cardiac valvular or of aortic disease.

The *negative facts* are :—

1. The absence of the symptoms and signs of a " coarse " cerebral lesion, especially of double optic neuritis.*

Epileptiform convulsions also result from the softening which follows embolism or thrombosis of the nutrient vessels of the motor cortex. In such cases the convulsions are preceded by paralysis ; the spasms tend to recur ; are not accompanied by loss of consciousness ; and are usually limited in distribution. They do not therefore call for consideration in this place.

Epileptiform Convulsions Resulting from Cerebral Hæmorrhage.

Cerebral hæmorrhage may be central or meningeal. In both cases, but especially in the latter, there may be epileptiform convulsions.

Central (Internal) Hæmorrhage—Hæmorrhagic Apoplexy.

Epileptiform convulsions sometimes, though rarely, occur at the commencement of an attack of internal cerebral hæmorrhage. They depend upon direct irritation of motor nerve tissue, possibly, too, in some cases upon the sudden anæmia of the motor centres, which results from the loss of blood. The spasms may be general, and are attended with profound and long continued coma.†

If consciousness be regained, the patient is found to be hemiplegic.

Epileptic convulsions, occurring under such circumstances, are most likely to be confounded with the convulsions due to uræmia, cerebral tumour, or embolism.

* Dr. Stephen Mackenzie has reported a case of embolism in which double optic neuritis occurred. Such an event is so exceptional that the general statement in the text may be safely relied upon.

† A cerebral hæmorrhage, sufficiently copious to be attended with general convulsions, is usually fatal ; the coma continues up to the time of death.

The Differential Diagnosis of Hæmorrhagic Apoplexy and Uræmia.

The distinction is not always easy, for cerebral hæmorrhage is especially apt to occur in the course of chronic Bright's disease (the cirrhotic kidney).

The chief points to which attention should be directed are :—

1. *The condition of the Urine.* (See p. 312.)

2. *The presence of symptoms characteristic of Bright's disease* (dropsy, &c.)

3. *The mode of onset of the symptoms.*—Uræmic symptoms appear gradually. (See p. 312.) In cerebral hæmorrhage the onset is usually quite sudden.

4. *The character of the attack.*—In uræmia the convulsions tend to recur, the patient may be semi-conscious during the intervals; there is no paralysis; the temperature is subnormal. In cerebral hæmorrhage, there is paralysis; the convulsions do not tend to recur; the patient is profoundly comatose; where the coma has lasted for more than twenty-four hours, the temperature may be above the normal.*

5. *The age of the patient.*—Apoplexy is very rare before 40. Uræmia may occur at any age. The fact that the patient is young would, therefore, be strongly against apoplexy.

6. *The condition of the heart and arteries.*—The presence of arterial disease is in favour of cerebral hæmorrhage.

The Differential Diagnosis of Hæmorrhagic Apoplexy and Cerebral Tumour.

In the course of some intra-cranial tumours, especially in syphilitic cases, pseudo-apoplectic attacks occur. These attacks, like the onset of an attack of cerebral hæmorrhage, may be attended with convulsions. The points to be taken into consideration in making the diagnosis are :—

1. *The condition of the optic discs.*—Optic neuritis or optic atrophy would be almost conclusive in favour of tumour, for these conditions are very rare in cerebral hæmorrhage.†

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* According to Professor Charcot, " in true apoplexy, especially when it depends upon cerebral hæmorrhage, the temperature constantly diminishes, some moments, after the attack, and afterwards remains, generally for at least twenty-four hours, below the normal standard, even when intense and reiterated convulsive fits occur."—*Diseases of the Nervous System.* Sydenham Society. Page 209.

† In some cases of cerebral hæmorrhage associated with kidney disease, optic neuritis does occur. Care must be taken not to confound the ordinary form of albuminuric retinitis with papillitis (neuritis limited to the optic discs).

2. *The previous history of the case—i.e.*, of symptoms of intra-cranial tumour, headache, vomiting, local convulsion, &c., &c. (See page 187).

3. *The presence of local paralysis of cranial nerves.*

4. *The age of the patient* may guide us in some cases. In many of the cases of intra-cranial tumour the patient is young.

The Differential Diagnosis of Epileptiform Convulsions Depending upon Cerebral Hæmorrhage and Embolism.

A distinction between these two conditions is sometimes impossible. The points to be taken into consideration are :—

1. *The age of the patient.*—If the patient is young, this is a strong fact in favour of embolism.

2. *The condition of the heart and arteries.*—The presence of cardiac valvular disease is slightly in favour of embolism. The absence of cardiac valvular disease is strongly in favour of apoplexy. The presence of arterial disease is slightly in favour of apoplexy.

3. *The condition of the kidneys.*—The presence of kidney disease (without cardiac valvular lesion) is in favour of cerebral hæmorrhage.

4. *The duration of the subsequent coma.*—Long continued coma is in favour of apoplexy.

5. *The distribution of the paralysis.*—The fact that the hemiplegia is left sided would be slightly in favour of apoplexy. (As already remarked, embolic hemiplegia is more frequently right sided).

6. *The presence of retinal hæmorrhages.*—Would be strongly in favour of apoplexy.

7. *The simultaneous or subsequent recurrence of embolic amaurosis.*—(Embolism of the central artery of the retina. If simultaneous, the amaurosis is on the same side as the lesion—*i.e.*, on the opposite side to the paralysis. If subsequent, it might be on either side.) Would be in favour of embolism.

8. *The mode of onset of the attack.*—In epileptiform convulsions due to cerebral hæmorrhage, consciousness is always lost; in embolic cases it may be retained. *

9. *The subsequent progress of the case.*—In embolic cases

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* In many cases of embolism *without* convulsions, consciousness is retained, but where the plug induces convulsions as well as paralysis, consciousness is usually lost.

the paralysis is, perhaps, as a rule, more completely recovered from.* To this statement, however, many exceptions occur.

The subsequent occurrence of epileptiform convulsions in the paralysed muscles is strongly in favour of embolism. In cerebral hæmorrhage the paralysis usually results from destruction of the conducting fibres. In embolism from arrested nutrition and subsequent changes in the generating cortical centres, and as we have already seen, local epileptiform spasms not unfrequently occur in the paralysed muscles while the cerebral softening is going on, and show that the way out for the discharge (*i. e.*, the conducting fibres) is sound.

Epileptiform Convulsions due to Meningeal Hæmorrhage.

The chief causes of meningeal hæmorrhage are :—

    (*a*) Traumatic injuries.
    (*b*) Rupture of intra-cranial aneurisms.
    (*c*) The condition termed pachymeningitis interna.

The occurrence of the hæmorrhage in all these cases may be attended with convulsions.

Meningeal hæmorrhage from traumatic causes.—The history of an injury, blow, fall, &c., and the immediate occurrence of convulsions, in an individual who has not previously had a fit, is suggestive that the convulsion is due to this cause.

Pachymeningitis interna.—These cases are extremely rare, and the symptoms are usually obscure. The positive points of diagnostic value are :—

1. A history of previous headache, vomiting, and other symptoms of meningeal irritation. In some cases there is failure of the intellect, and imperfect or incoherent speech.

2. The sudden occurrence, without any obvious cause, such as traumatic injury, of collapse, of headache, and of vomiting. The speedy onset of symptoms of meningeal irritation ; especially twitchings and contractions in all four extremities; contraction of the pupils ; the subsequent occurrence of symptoms of compression.

3. The subsequent progress of the case. When recovery takes place, as it sometimes does, there is no subsequent paralysis ; a positive fact of great value in the differential diagnosis of this condition and internal cerebral hæmorrhage.

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* In the earlier stages of most cases of cerebral hæmorrhage (*i. e.*, during the first 10 or 14 days) the paralysis is partly due to shock, œdema, the pressure of the clot, and the inflammatory conditions going on around the clot. The statement in the text only applies, then, to the paralysis, which remains after these conditions have subsided.

It must be confessed, however, that a definite diagnosis of pachymeningitis interna is often quite impossible.

The conditions most likely to be mistaken for it are:—

(*a*) Cases of *internal cerebral hæmorrhage.* In cases of cerebral hæmorrhage sufficiently severe to be attended by general epileptiform convulsions, the coma is usually much more rapid and profound; hemiplegia is present; the pupils are not contracted (an exception to this occurs in cases of hæmorrhage into the pons).

(*b*) The *rupture of an intra-cranial aneurism* (see below).

(*c*) *Solid intra-cranial tumour.*—Special importance is to be placed on the condition of the optic discs (absence of papillitis in pachymeningitis interna) and on the state of the temperature (some pyrexia is usually present in pachymeningitis interna).

(*d*) *Cases of meningitis.*—The distinction is often quite impossible. Pachymeningitis is more common in old people. The temperature is perhaps higher and more constantly elevated in meningitis. A sudden onset with collapse is in favour of pachymeningitis. The associated pathological conditions, the presence or absence of tubercular disease elsewhere is also of importance. The absence of symptoms indicative of inflammation of the base of the brain is in favour of pachymeningitis.

Epileptiform Convulsions from the Rupture of an Intra-cranial Aneurism.

In many cases the diagnosis is impossible. The conditions most likely to be confounded with it are:—

> (*a*) Internal cerebral hæmorrhage.
> (*b*) Embolism.
> (*c*) General bleeding.
> (*d*) Cerebral tumours.
> (*e*) Pachymeningitis interna.

The positive facts in favour of the convulsions and coma being due to the rupture of an intra-cranial aneurism are:—

1. A previous history of symptoms suggestive of the presence of an intra-cranial tumour, and of an aneurism in particular.

In the majority of cases of intra-cranial aneurism, there are probably no positive symptoms (the aneurism is quite latent); in some cases there are the usual symptoms of solid intra-cranial growths. Special symptoms suggestive of the case being an aneurism are:—

(*a*) Unilateral optic neuritis, unilateral paralysis of the muscles supplied by the third, fourth, and sixth nerves.

(*b*) A localised murmur over some portion of the skull. The fact that the murmur is arrested by pressure in the neck would indicate that it involved the internal carotid.

(*c*) The presence of associated cardiac, valvular, or arterial (aortic) disease is of some value, as a point of distinction between the other forms of intra-cranial tumour and intra-cranial aneurism. In young subjects intra-cranial aneurisms not unfrequently result from embolic plugging of vessels.

Epileptiform Convulsions due to Lead Impregnation.

The spasms are general, and tend to recur. Consciousness is lost during the attack. The patient may be comatose, delirious, or maniacal during the intervals. Double optic neuritis, or post neuritic atrophy, is always (in my experience) present. There is usually headache and vomiting.

The case may therefore be easily mistaken for one of cerebral tumour, uræmia, or meningitis.

The positive points in favour of lead impregnation are :—

1. *The presence of other indications of lead poisoning*, more particularly the blue line on the gums, wrist drop, &c.

2. *The occupation of the patient.*—The more severe cases of lead poisoning (lead encephalopathy) are seldom if ever seen in painters, but occur almost exclusively amongst workers in white lead factories.

3. *The age and sex of the patient.*—Theoretically, persons of either sex, or of any age may be affected. Practically, we usually find that the patient is a female, and young. This is due to the fact that the girls do the dirtiest work, and that they do not appreciate the value of, and hence do not take the same, precautionary measures as the older hands—the men.

4. The *history* of previous attacks of lead colic, constipation, wrist drop, lead rheumatism, convulsions, and coma.

5. *The character of the mental condition.*—In cases of intra-cranial tumour, mania and delirium seldom occur. Their presence is, however, highly suggestive of meningitis. In some cases of lead encephalopathy there is mania or delirium, irrespective of meningitis ; in other cases the mental condition between the convulsions closely resembles that of hystero-epilepsy.

The *negative* facts in favour of lead impregnation are :—

1. The fact that there is no pyrexia; an important differential point between lead encephalopathy and meningitis.*

2. The fact that the headache is not usually so severe and paroxysmal as the headache of intra-cranial tumours.

3. The absence of cardiac, renal, and arterial disease, excluding embolism, thrombosis, and uræmia.†

Uræmia.

The convulsions are general, and tend to recur. There is loss of consciousness. The patient is usually comatose or delirious during the intervals. The *positive* facts in favour of uræmia are :—

1. *The condition of the urine.*—Scanty in amount, or entirely suppressed. Urea greatly diminished. The presence of albumen and casts.

2. *The associated symptoms of renal disease.* (a) *Dropsy.*— In cases of acute Bright's disease, and in the large white form of chronic Bright's disease (parenchymatous nephritis) there is general dropsy. In cases of cirrhotic kidney (the most common cause of uræmia), the dropsy may be slight, or absent.

(b) *The condition of the heart and arterial tension.*—In the small red granular (cirrhotic) kidney, the left ventricle is hypertrophied, and the arterial tension is high. The same conditions, though to a less extent, are present in the large white kidney.

(c) *The condition of the retina.*—In the cirrhotic, and, less frequently, in the large white form, there is often albuminous retinitis. In some cases there is simple papillitis.

(d) *The odour of the breath* is often characteristic. Cheyne-Stokes breathing is sometimes observed.

3. *The history of the case.*—(a) The fact that the patient has suffered for some time from the symptoms of chronic Bright's disease. ‡

(b) The fact that the convulsions are usually preceded by

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* Meningitis sometimes complicates lead encephalopathy. The temperature is then, of course, elevated.

† Lead is a cause of cirrhosis of the kidney, and uræmia is probably the cause of the convulsions in some cases of lead poisoning. In such cases the condition of the urine must be relied upon to make the distinction. It is important, however, to remember that the mere presence of albumen must not be taken as evidence of uræmia. In several of my cases there was leucorrhœa, and the urine was albuminous from that cause.

‡ In *acute* cases there is seldom any difficulty, the dropsy and characters of the urine are so striking.

well marked symptoms; drowsiness; twitching of the muscles; headache; nausea; vomiting; sudden and temporary amaurosis, &c.

The *negative* facts in favour of uræmia are :—

1. The condition of the temperature. It is usually normal or sub-normal; meningitis is thus excluded.*

2. The absence of the symptoms and signs of lead impregnation. (See p. 311.)

3. The absence of positive indications of cerebral hæmorrhage. (See p. 306.)

Convulsions Occurring During Pregnancy and Delivery. (Puerperal Éclampsia.)

In many of these cases the convulsions are uræmic. According to Aitken, puerperal convulsions differ from ordinary uræmic convulsions in the fact that, in the former the temperature is elevated, but in ordinary uræmic convulsions it is lowered.

The causation of the convulsions in any given case must be ascertained by observing :—

1. The condition of the urine.

2. The presence or absence of symptoms of renal disease, dropsy, &c.

3. The character of the symptoms. In typical puerperal convulsions the attack is usually ushered in by dimness of vision. The spasms tend to recur. There is often delirium or coma in the intervals.

4. A history of similar attacks during, but only during, previous pregnancies.

The *negative* facts are :—

5. The absence of any other apparent cause for the convulsions.

6. The fact that there is no history of genuine epilepsy.

When a puerperal woman who has been subject to ordinary epilepsy is seized with convulsions during delivery, it is often a difficult question to determine the exact nature of the attack.

If the urine is natural; if there are no associated symptoms of renal disease; if the spasms do not tend to recur, the diagnosis of "genuine" epilepsy may be ventured upon. Even if there is kidney disease, convulsions occurring in a puerperal woman who is the subject of "idiopathic" epilepsy are much less serious than in other cases.

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* Bartels relates a case in which a temperature of 105·1° F. was observed after the attack.—Ziemssen's *Cyclopædia.* Vol. xv, p. 146.

Epileptiform Convulsions from General Hæmorrhage.

Hæmorrhage sufficiently copious to cause general convulsions is usually fatal. There can be no question as to the diagnosis when the bleeding is external. When it is internal, as in the rupture of an aneurism, retro-uterine hæmatocele, extra-uterine pregnancy, &c., the diagnosis is more difficult. The following are the *positive* facts indicating that general hæmorrhage is the cause of the convulsions.

1. The presence of general pallor; of marked collapse. The character of the pulse. The fact that the insensibility is only temporary.

2. The presence of symptoms and signs pointing to some internal lesion which could give rise to the bleeding; such as a pulsating tumour in the abdomen; pain and tenderness over the abdomen, vomiting, &c. (usually well marked in cases of ruptured extra-uterine cyst).

3. A history of symptoms indicative of such lesions.

The *negative* facts are :—

4. The absence of any other obvious cause.

5. The absence of a history of previous epileptic fits.

In cases of ruptured intra-cranial aneurism there is in addition—

1. Profound and lasting coma.

2. Possibly a history of previous head symptoms, paralysis of muscles supplied by cranial nerves, &c. (See p. 310.)

Epileptiform Convulsions Due to Profuse Diarrhœa.

In children summer diarrhœa is often followed by great exhaustion, collapse, and convulsions. In such cases the appearance of the patient and the nature of the previous symptoms are quite distinctive.

Epileptiform Convulsions due to the onset of the Exanthematæ or other Febrile conditions.

Convulsions of this description occur exclusively in children, and take the place of the initial rigor of the adult.

During the attack itself the cause of the convulsions cannot be ascertained. It is only when the spasms cease and when the symptoms and signs of the main affection, of which the convulsions are the forerunners, appear, that we can form a positive opinion as to the nature of the case.

Nevertheless, we may suspect and hope that the convulsions are of this description when :—

1. The onset is abrupt and there have been no previous head symptoms.

2. The child has been previously healthy.

·3. The family history is good.

4. There is no reflex source of irritation such as teething.

5. There is no other apparent cause for the attack.

The suspicion will be much strengthened if there is a history of exposure to infection, or if an epidemic is prevalent.

Group D. *Cases of Epileptiform Convulsions in which there are no positive indications (objective symptoms and physical signs) of a lesion.*

The chief causes of convulsions which we have to consider under this head are (1) reflex convulsions; (2) convulsions due to malaria; (3) convulsions due to alcohol; (4) cases of idiopathic or genuine epilepsy.

Reflex Epileptiform Convulsions.

Reflex convulsions are very much more common in children than in adults. The diagnosis is to be made by attention to the following points:—

1. The fact that there is no other apparent cause.

2. That there is nothing as to personal or family history suggestive of genuine epilepsy.

3. That there is an obvious reflex source of irritation such as teething.

4. That the convulsions cease when this reflex source of irritation is removed.

Epileptiform Convulsions due to Malaria.

Cases of this description are very rarely, if ever, met with in this country. The diagnosis is based on the following facts:—

1. That there is no apparent cause for the attack.

2. That the convulsions assume a periodic type.

3. That there are other manifestations of malaria, or that the patient has previously suffered from malaria, and has lived in a malarious district.

4. That the convulsions are relieved by anti-periodic remedies.

Idiopathic or Genuine Epilepsy.

The diagnosis of genuine epilepsy is to be made by attention to the following facts:—

1. *The character of the spasms.*—The spasms are general (bilateral) but always stronger on one side of the body. There is, in *the vast majority*, loss of consciousness. There is, as a rule, no immediate recurrence of the attack. The spasms are not followed by paralysis.

2. *The age of the patient and the date of occurrence of the first attack.**—According to Dr. Gowers, in 29 per cent the first fit occurs under 10 years of age; in 46 per cent between 10 and 20; 15·7 per cent between 20 and 30; 6 per cent between 30 and 40; 2 per cent between 40 and 50; 1 per cent between 50 and 60; and $\frac{1}{3}$ per cent over 60.

Seventy-five per cent of the whole, therefore, occur before the age of 20.

3. *The previous history.*—There may be a previous history of minor epilepsy (*petit mal*) or of true epileptic seizures.

4. *The family history.*—Genuine epilepsy is in many cases hereditary. The near relatives, if not actually epileptic, may have suffered from some form or other of nerve disease, (hysteria, simple nervousness, chorea, &c., &c.)

5. *The presence of a bromide rash.*—In cases in which no history can be elicited, the presence of a bromide rash on the face is valuable corroborative evidence. It is, however, only present in a small proportion of cases.

6. *The negative fact.*—That there is no evidence of "coarse" cerebral disease, of arterial, kidney, or cardiac disease, of plumbism. In short, no evidence of any of the causes of epileptiform convulsions mentioned under Class C.

Epileptiform Convulsions due to Alcohol.

In these cases a positive diagnosis is often difficult. The facts which justify such an opinion are:—

1. The fact that there is no obvious organic cause. (Absence of the symptoms and signs of all the conditions grouped under Class C.)

2. That there is nothing in the personal or family history suggestive of idiopathic epilepsy.

3. That there is no obvious reflex source of irritation.

4. *The age of the patient.*—These patients are always adults and usually middle aged.

5. *That there is a distinct history of alcoholism.*—Caution must be exercised in accepting the patient's statements on this

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* In the case we have supposed (see cases grouped under Class B, page 184) this information may not be forthcoming. Idiopathic or genuine epilepsy seldom commences after 30 years of age.

fact as strictly accurate. In many of these cases the patient will deny that he is given to any excess, but on cross-examination will admit that he is in the habit of taking 4, 6, 8, or even more glasses of whisky per day.

6. *The effects of treatment.*—In many cases the convulsions cease when all stimulants are withdrawn. In other cases the " epileptic habit " remains for some time.

7. The presence of other symptoms suggestive of alcohol, such as tremor of the tongue, &c. When such *positive* indications are present the case comes under group C.

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

WESTERN INFIRMARY.

Reports under the Supervision of Dr. W. G. Dun.

From Professor M'Call Anderson's Wards.

TWO CASES OF PARACENTESIS THORACIS, WITH SOUTHEY'S TROCHAR. [From notes supplied by Mr. John Lindsay Steven, M.B.]—CASE I. J. F., æt. 22, a shoemaker, was admitted to Ward II on 7th January, 1881, complaining of cough and expectoration of about eight weeks' duration, and of pain in the left side aggravated by coughing or a long inspiration, of five weeks' duration. The family history, as obtained from the patient, is very imperfect, and throws but little light upon the case. Up till about a year ago he was always a very healthy man, but about this time last year he suffered from a slight cold, which, however, did not lay him up, and was neglected. After it had lasted for a week or two, he was seized with a pain in his *right* side, which confined him to bed, and was pronounced to be due to pleurisy by a medical man. As the result of treatment, in a very short time he got quite well, and remained so till about eight weeks prior to admission, when, from exposure to variations of temperature at his work, he again caught cold. This he also neglected, and three weeks afterwards a severe pain was felt in the *left* side while he was sitting at work. In about three weeks, as he had improved somewhat, he attempted to begin work, but in a day or two had to lie up again on account of great aggravation of the pain. Since then he has

been entirely confined to bed; and throughout the whole illness the cough and expectoration have been very troublesome. The temperatures since admission have been high, the evening ones especially ranging from 100° to 103° F. The urine is scanty and concentrated, but not albuminous; and the appetite bad. The left side of the chest is found to be distinctly fuller than the right, and dull to percussion all over, the dulness extending fully an inch to the right of middle line in front. On this side too the breath sounds are almost inaudible; the vocal fremitus is gone, and the vocal resonance diminished. The area of cardiac dulness is carried downwards and to the right, the sounds, which are normal, are much more distinct in right mammary region than in left, and a distinct impulse is observed in fourth right intercostal space.

18th January, 1881.—To-day Dr. Anderson, using Southey's trochar and cannula, with the largest size of tubing, performed paracentesis thoracis. The result was most successful, a serous fluid beginning to drop from the tubule immediately. In about three hours, as the serum had ceased to flow, the cannula was removed, and it was found that 45 fluid ounces had been withdrawn.

22nd January, 1881.—Patient much improved in general health. The temperatures are not so high; his breathing is much easier; and the cough much better, both as regards its severity and frequency. The only change noted in the physical signs is that the percussion note of upper half of left lung is much clearer, and there is no extension of dulness to right of middle line. A slight friction râle is noted at left base. The displacement of the heart still continues.

25th February, 1881.—Patient, who is practically well and has been assisting in the work of the ward for some time, was sent to the Convalescent Home to-day. There is still diminished breathing over the left lung, especially at the base, where there is also a little dulness. The cardiac dulness remains the same as in the previous note.

CASE II. W. S., æt. 26, single, a cotton-spinner, was admitted to Ward II on 17th January, 1881, complaining of swelling of the abdomen of nine weeks' duration, shortness of breath of two weeks, and considerable weakness. The family history, as far as can be ascertained from patient, seems to be very good; he himself has always been fairly healthy, and has led a steady life. For some time previous to the onset of the present illness he felt "out of sorts," and one morning noticed that he was unable to button his trousers. He had no pain or uneasy feeling, and, had it not been for this,

his attention would not have been drawn to the state of his abdomen. For five weeks the swelling of the abdomen steadily increased, since which date it has remained *in statu quo.* About two weeks ago the shortness of breath set in, and lately he has been troubled with a cough, accompanied by slight mucous expectoration.

Condition on Admission.—Patient is a good deal emaciated, and the skin is hot and dry. Strumous scars are present on the neck, and well-marked acne indurata on the chest and back. The abdomen is considerably distended in a quite uniform manner. The percussion note, though slightly flat all over, is nowhere absolutely dull. No evidence of the presence of fluid or abnormal growth can be made out. The abdominal walls feel tense and resistant; and there is no pain or tenderness anywhere. The hepatic dulness is unaltered.

Anteriorly the pulmonary percussion is good at both apices, but in the right mammary region marked dulness is made out, which is altered by the position of the patient. Posteriorly there is great dulness at both bases, where the respiratory murmur is very feeble, and the vocal fremitus and resonance exceedingly defective. In the left infraspinous space slight moist râles are audible. The heart is normal; the pulse 72, and the respirations 17. The tongue is coated with a thick creamy fur, and the bowels are very costive; the urine is normal.

7th February, 1881.—To-day Dr. Anderson performed paracentesis thoracis on the left side, and 15 ounces of a clear yellow serum were withdrawn from the pleural cavity. For some time after the operation patient remained quite well, but towards evening he complained of pain at the base of the left lung, which was greatly aggravated by deep inspiration, coughing, or movement. On auscultating over the painful area, loud friction sound with inspiration and expiration is heard.

4th March, 1881.—This patient's general state has greatly improved since his admission. His bowels are still very costive, but he has neither pain nor ache, and takes his food well. There is now no shortness of breath. The swelling of the abdomen is now much less than on admission. There is still some dulness at the bases of the lungs behind, with somewhat distant respiration, and slight tendency to ægophony at right base.

5th March, 1881.—Patient left to-day at his own desire.

Remarks.—In both cases the instrument used was a Southey's trochar and cannula, with the largest size of tubing attached. The patient was made to sit up in bed, and supported by

pillows, with his arms folded in front. The site chosen for puncture in each case was a point between the seventh and eighth ribs in the dorso-lateral region of the chest, a little to the outside of the line of the lower angle of the scapula. The spot was marked with ink, and the skin frozen by means of ice and salt. The instrument was then carefully lubricated with carbolic oil, and slowly introduced into the pleural cavity. On withdrawing the trochar the serum began to drop from the tubing immediately. The canula was then fixed *in situ* by means of strips of adhesive plaster placed over the shield with which it is provided. It was also found a great advantage to have a table wheeled up to the bed, on which the patient could rest his arms while the fluid was draining away. The points to be attended to in the use of Southey's instrument are these: the tubing, before being used, should be proved to be quite pervious by passing carbolic solution through it by means of a hypodermic syringe; the trochar should be very sharp, and the cannula *should have no shoulder;* and lastly, the greatest care and gentleness should be observed in introducing the instrument, as, from its extreme delicacy, the slightest violence in manipulation would be apt to break it across and leave the point in the tissues. If these points are attended to, the operation is one of great simplicity and safety; and Dr. Anderson is of opinion that we have in it a method of treating pleural effusions which is perhaps too seldom employed. Its advantages are that here we have a means of removing fluid which would take a very long time to be absorbed, and, even if we did not get the whole of it away, the removal of a part may begin and hasten the process of absorption. The instrument, too, is of the simplest kind, and not liable to get out of order easily, and the method of operating is such that with care it may be undertaken by any one. The very gradual manner in which the fluid trickles away is, of course, rather an advantage than otherwise, as far at least as safety to the patient is concerned.

It is probable that there was a tubercular element in the second case.

GLASGOW ROYAL INFIRMARY.

From Dr. Maclaren's Wards.

CASE OF PHOSPHORUS AND STRYCHNIA POISONING—TEMPORARY IMPROVEMENT—JAUNDICE—DEATH—P.M. APPEARANCES. [Reported by James Donald, Resident Assistant.]—J. A., æt.

22, labourer, was admitted into Ward VI, 23rd January, 1881, and when laid upon the bed exhibited the following symptoms:
—The hands were clenched, the thumbs strongly drawn towards the hypothenar eminence, and the arms spasmodically bent into a semiflexed position; the eyeballs were continually rolling about, and the muscles of the face exhibited spasmodic twitchings, simulating thus at intervals the *risus sardonicus* of tetanus; the muscles of the back and of front of chest and abdomen were also in a state of spasm. The muscles of the back and posterior aspect of neck being the more powerfully convulsed, tended to throw patient into the opisthotonic position. The muscles of the legs were strongly contracted, and the great toes were pointed inwards and upwards.

At intervals the spasms above noted subsided, and left the patient in an apparent state of quiescence, but the least noise or motion, or other exciting cause, such as the vibrations of the floor communicated to the bed on walking past, the adjusting of the bed-clothes around the patient, the touching of the patient in any way, or the administration of a drink would at once bring on an attack of convulsions.

During the whole of this time the patient was quite conscious, and could answer any questions put to him.

Upon tapping his chest or abdomen with the point of the fingers, the patient complained of pain, and immediately the convulsive seizures were reproduced. The pupils during the paroxysm were more or less dilated, and in the intervals between were somewhat contracted. He had some difficulty in micturating.

He complained of pain in the epigastrium, and was in a state of extreme excitability.

Patient stated that owing to certain domestic disagreements he purchased in a chemist's shop one sixpenny packet of Gibson's vermin killer, and afterwards in another shop a threepenny bottle of phosphorus paste, mixed them in a pint of porter and drank it off, in about half-an-hour afterwards he fell down suddenly as if "struck by an electric shock," and completely lost the power of movement and of speech, in this condition he was conveyed home, and not long afterwards he vomited a dark-greenish material which exhibited luminosity; his breath also was phosphorescent in the dark. He was after some delay conveyed to the Royal Infirmary, when his condition was as above described.

Note.—The symptoms since observed have been strictly those of strychnia poisoning, with the exception perhaps of a green watery mucus which he vomits at intervals.

The *treatment* at once adopted was that for strychnia poisoning; this consisted in the administration of ʒiii of potass. brom., and 30 grs. of chlor. hydrat. by the mouth, which was afterwards repeated in an hour. After the second dose the patient felt distinctly better, the pain was gone and the convulsions greatly diminished, and the patient slept well for some hours.

6 p.m. same day.—Patient expresses himself as being greatly improved, the convulsions can only be produced, and that to a slight extent, on firmly striking the front of chest. Pupils are equal. One ounce of castor oil ordered, and as patient has not slept for some hours, ʒi of potass. brom. was given.

24th January.—The convulsions are entirely gone, but he continues to vomit, at intervals, green watery mucus, and is unable to retain any solid food in the stomach. Complains of pain in the epigastrium.

25th January.—Distinct jaundice, pain in epigastrium greatly increased, vomiting continues, so that he had to be fed per rectum.

He continued in this condition until 28th January, when he became delirious, which was followed by coma and death.

Post-mortem Examination by Dr. Foulis.—The pericardium contained an ounce of reddish fluid. The heart was flabby, the right side of the heart contained a moderate quantity of dark red blood clot. The left side was nearly empty. Heart tissue was pale and soft.

In lower part of right lung, a large branch of the pulmonary artery was choked up by a dark soft mottled thrombus.

The stomach contained a quantity of dark brown fluid. The lining of the stomach was everywhere of a dull slate colour, except the fundus, where the half digested food had whitened the surface to some extent, but there was no ulceration.

The spleen was small and rather soft. Kidneys were of normal size, but the cortex presented a peculiar yellow-fawn colour, with red dots where the Malpighian corpuscles are.

The liver had a peculiar appearance, the whole of the right lobe being occupied by masses of a pale yellow and orange colour, with interspaces of a more purple colour, giving it an injected appearance. The liver tissue generally was soft, and in places even pulpy, especially towards the back part of the right lobe.

The lining of the fauces, larynx, and œsophagus was injected, and right tonsil slightly ulcerated. Brain normal.

From Dr. Morton's Wards.

RUPTURE OF DIAPHRAGM AND PROTRUSION OF ABDOMINAL VISCERA INTO THORAX CAUSED BY FALL. [Reported by Mr. J. Johnstone, House Surgeon.]—A. M., æt. 49, sweep, was admitted into Ward XXVII, Royal Infirmary, on 10th January, 1881.

On examination, the following injuries, caused by a fall from a three storey house, were found to exist:—Fracture of the left femur at the junction of its upper and middle thirds, a small punctured wound over left patella, Colles's fracture of the left forearm, fracture of olecranon on same side, and an abrasion above left frontal eminence. His breath was smelling strongly of alcohol; pulse weak and irregular. He complained of pain over left infra-mammary region, and could lie on his left side only. His breathing was laboured and thoracic in character. About three hours after admission he vomited a dark coloured matter mixed with undigested food. He slept a little during the night, but was disturbed by a short dry cough. Twenty-seven hours after admission the dyspnœa became rapidly worse, and tympanicity of the anterior part of the left side of the chest developed itself. He sank rapidly, and died two hours after the appearance of the last mentioned symptom.

On opening the abdomen the small intestine was seen to be distended with gas and slightly congested. The peritoneal cavity contained a quantity of bloody fluid. There was a small rupture about an inch in length on the lower surface of the right lobe of the liver, and a large rent through the central tendon of the left wing of the diaphragm, through which the stomach, spleen, and about half the small intestine protruded into the left side of the thorax, completely compressing the left lung and displacing the heart to the right side of the sternum. The stomach was nearly empty of food and distended with gas.

From Dr. Dunlop's Wards.

CASE OF GUNSHOT WOUND—RECOVERY. [Reported by J. M. Watson, House Surgeon.]—J. B., æt. 36, was admitted to Ward XXIV, Royal Infirmary, on 16th October, 1880, with a severe gunshot wound of left leg. While out shooting that day, his gun, loaded with small shot, was accidentally discharged while in his hand, the shot lodging a little below and to the inner side of the knee. It passed down the muscles of the calf, lacerating them fearfully and leaving a deep ragged

wound in its track. The tibia, however, was found to have escaped uninjured, though the wound was very close to it, and the posterior tibial artery likewise seemed to be intact, as it still pulsated at the ankle. A quantity of the shot was removed and the wound dressed under the spray.

Three weeks after admission a very severe secondary hæmorrhage set in, but was controlled by plugging the wound (now a large sloughing cavity) with oiled lint and applying some compression with a bandage. This was not disturbed for two days, when the wound was refilled, but more loosely, with the oiled lint. Three days later another alarming hæmorrhage occurred. The blood welled up through the sloughy tissue at the bottom of the wound, and was so profuse, that had not the femoral artery been immediately controlled, the result would have been serious. It was again stopped by compression. The posterior tibial artery was still pulsating at the ankle, but a few days later it stopped; still the foot did not suffer at all from the interference with its blood supply. From this the wound progressed slowly, but favourably. Some shot came away with pieces of slough from time to time, but the wound being kept sweet, there was very little constitutional disturbance. The cavity has now granulated up; the wound is quite superficial, and the man is able to go about with a good limb.

INJURY FROM A BLOW—PARAPLEGIA—RECOVERY. [Reported by J. M. Watson, House Surgeon.]—D. H., æt. 32, ship's carpenter, was admitted to Ward XXIV of the Royal Infirmary on 8th December, 1880.

On admission he was unable to pass water, and had no control over the sphincter ani. He could walk a little with difficulty, and in doing so his right leg was stiff and awkward. He stood quite steadily with his eyes closed, but on trying to walk he staggered much, and always to the right side.

The history of the case showed that a log of wood of considerable weight had fallen from a height, striking him at an acute angle, so that though the blow was first sustained at the interscapular region, the greatest shock was felt in the lumbar region. The chest was at the same time jammed against a trestle. Patient was, though not immediately, rendered unconscious. This happened on the morning of 21st October. He regained some degree of consciousness for a short time in the evening, lapsing, however, in a short time, again into an unconscious state. In this condition, with gradually increasing intervals of consciousness, he continued

for a week, when he permanently regained sensibility. His lower limbs were completely paralysed with loss of sensation for a fortnight. After this there was a gradual return of motion and sensation. In a month from date of accident patient was able to move about with crutches. The right leg was much longer in regaining its lost function than the left, he having to help the right one with his hands when he could move the other at will. He remained in this condition till his admission. Before coming in he had been leeched over the spine, and had strong mustard poultices applied.

The treatment adopted by Dr. Dunlop consisted simply in dry cupping over the lumbar region every third day. The bladder was emptied twice a day, and an occasional dose of castor oil administered. After the first application of the cups he regained some power over the rectum. This gradually improved, and in ten days he was able to pass urine. He was discharged perfectly well on 24th January, 1881.

JUBILEE OF DR. BORLAND OF KILMARNOCK.—About the end of April this gentleman, who has done so much good work in Kilmarnock Infirmary, will have completed fifty years of active practice, and the event will be celebrated by the presentation of a Jubilee Testimonial, for which over £500 has been already subscribed. Dr. Borland did excellent service during the cholera epidemics of 1832 and 1849. He has acted as Surgeon to the Kilmarnock Infirmary since its institution in 1868, and is Medical Officer of Health to the Burgh.

MEDICAL ITEMS.

UNDER THE DIRECTION OF

ALEX. NAPIER, M.D.

Treatment of Vaginitis by a New Method.—The ordinary treatment of this affection consists in the use of warm baths and douches, emollient applications, &c., during the first stage, and the employment of light caustics or astringents in the second; but this is far from being satisfactory, as the first period of treatment is usually long, and the use of such remedies painful, while the second period is still longer, and after all the disease is but imperfectly cured, and is very apt

to return. Moved by these considerations, M. Terrillon adopts a different mode of treatment, apparently with marked success. The substance employed is a pomade composed of three parts of starch, three of vaseline, and one of tannin. This makes a thick dough-like mass, which is introduced into the vagina by means of a special instrument resembling a small cylindrical speculum fitted with a piston; as this instrument is of small diameter (10 ctm.) and bevelled at the end, it may be introduced without pain, even when the vagina is very narrow, and it permits of the application of the remedy at any point in the vagina, even at its deepest part. 15 to 25 grammes of the pomade are left in the vagina; and as it is of tolerably firm consistence no tampon is required to keep it in place. It does not dissolve rapidly, and portions of it may be found in the vagina eight, twelve, or even fourteen days afterwards; neither does it become hard, and thus act as an irritant, like many preparations of pulverulent substances, such as trisnitrate of bismuth. The result of this treatment is very striking. In the course of a day or two the vaginal discharge diminishes, and sometimes even entirely ceases, the vaginal wall remaining red and congested, but quite dry and rough to the touch. The number of applications varies with the intensity of the attack; sometimes a single application cures, at other times four or five have to be made at intervals of seven to ten days. Besides its great efficacy, this method of treatment has many advantages over the older methods; treatment is begun at once, even while the vaginitis is acute; it is painless; and it commends itself to patients by the fact that examination and the application of the remedy are made so seldom. Twenty cases are here given, in which the success of this mode of treatment is shown.—*Bull. Gen. de Thérap.* 15th March, 1881.

Treatment of Malignant Pustule.—Professor Verneuil gives here (*Bull. Gén. de Thérap.*, 28th February, 1881) what he considers to be a rational and successful method of treating this affection, a method in which nothing is left to chance, and in which all the indications raised by the known nature of the disease are fully and easily met. He says that locally three distinct regions or zones are recognisable: first, in the centre, the slough with its crown of little vesicles; secondly, immediately outside the slough, a zone of variable extent and depth, in which the skin and subcutaneous cellular tissue are manifestly inflamed and indurated; and thirdly, beyond these, a zone of very considerable extent marked chiefly by œdematous

swelling, with or without redness, painful or not to pressure. In each of these regions special local measures must be employed; in the central zone or mortified portion, radical destruction; in the indurated zone, in which the parts are threatened with gangrene, energetic revulsives; in the œdematous zone, interstitial disinfection. The following plan of treatment is therefore recommended :—First, destruction of the malignant pustule itself by the thermocautery used as a bistoury; secondly, numerous punctures (*pointes de feu*) made with the thermocautery in the indurated region; thirdly, a series of hypodermic, injections of tincture of iodine (strength 1 in 200) in the œdematous zone, ten drops being left in the tissues, the needle being also pushed quite to the bottom of the œdematous parts. If general blood-poisoning has taken place, or seems imminent, the patient should also get 2 to 4 drops of the tincture of iodine every two hours, combined or not with other remedies. A very striking case of malignant pustule beginning in the upper eyelid, treated successfully in this way, is recorded in detail; in a few hours all the dangerous symptoms had to a large extent subsided, in two days fever and pain had gone, and the œdema had almost disappeared. It is worthy of note that though bacteria were discovered in the slough which was removed, they were not found in the serous fluid of the vesicles, nor in the sero-sanguineous fluid expressed from the zone of induration.

On a New Method of Treatment of Relaxation of the Membrana Tympani.—By William M'Keown, M.D., Surgeon to the Ulster Eye, Ear, and Throat Hospital, Belfast. This paper is a continuation of the one published in the *Dublin Journal* in June, 1880, and quoted in the *Glasgow Medical Journal*. In testing patients as to their hearing distance the author does not make use of the watch, but of his own voice, stating the number of feet distant at which the patient can repeat what he says.

He gives details of fifteen cases in which he applied collodion to the relaxed membrane, and he was satisfied with the decided improvement in all the cases. As a result of his observation and practice he gives the following conclusions :—

1. It is the only plan of treatment of any value yet brought before the profession.

2. In the majority of cases it effects an immediate improvement of the hearing and a diminution of the unpleasant symptoms of noise, &c.

3. It is an important auxiliary to treatment, and shortens its duration.

4. It diminishes the unsteadiness of the hearing, *i. e.*, in cases where the patient sometimes hears well, and at other times cannot hear at all distinctly.

5. By the long continued bracing up of the relaxed membrane it tends to bring about a permanent improvement in the tension.—*Dublin Journal of Medical Science.* **January,** 1881.—J. C. R.

A new Remedy in Diphtheria.—Dr. George Guttmann, Cronstadt, has met with marked success from the employment of pilocarpine in diphtheria, both in its mildest and in its most severe forms. Cases seen early, when the membrane was still loosely adherent, were cured within twenty-four hours. He believes no doubt can be raised as to the fact that the cases were really diphtheritic, since the contagion could be traced in many instances. The same treatment is also valuable in acute tonsillitis, the most extreme swelling disappearing in 36 hours. He combines pepsin with the pilocarpine to combat the gastric catarrh usually present. His formulæ are:—

Rj. Pilocarpin. muriat., . grs. ·3 to ·6.
Pepsin., . . . grs. 9 to 12.
Acidi hydrochlor., . . gtt. ij.
Aquæ dest., . . . oz. 2·8. **M**

Sig.—A teaspoonful hourly for children.

For Adults,

Rj. Pilocarpin. muriat., . grs. ·45 to ·75.
Pepsin., . . . grs. 30.
Acidi hydrochlor., . . gtt. iij.
Aquæ dest., . . . oz. 8·4. **M**

Sig.—Tablespoonful hourly.

He has never observed any ill effects. He gives a small amount of wine after each dose.—(*Berlin. Klin. Woch.* 4th October, 1880.) *St. Louis Courier of Medicine.* November, 1880.—G. S. M.

Bloodless Removal of Wens.—J. W. Schuarmowski (Moscow) treats wens by injection of a few drops of 10 per cent solution of chloride of zinc, repeated at intervals of five days. From three to nine injections have been found in eleven cases to be sufficient. In one of these cases a wen,

one and a half inches in diameter, situated upon the upper eyelid, totally disappeared after the fourth injection. The injection may cause slight swelling and local heat for a day or two, but has not been found to cause suppuration.—*Centralb. f. Chir.* 29th Jan., 1881.—D. M'Ph.

Convulsions from Carbolic Acid Poisoning.—Dr. Hector Treub reports in the *Centralblatt f. Chir.* for 29th Jan., a case of convulsions due, as he thinks, to absorption of carbolic acid from antiseptic dressings and spray, which occurred in the clinique of Prof. v. Herson at Leyden. But few cases have yet been recorded where such symptoms have been observed, which is noteworthy on account of the great frequency with which they occur in animals poisoned by carbolic acid.

The patient was a weakly girl of 11 years of age, had been under treatment some time for "catarrhal jaundice," but came under surgical treatment for "epipleural abscess." The abscess had been allowed to burst spontaneously, and discharge for twelve days, during which the temperature ranged between 97° F. (M.); and 103° F. (E). On the 8th Oct., the wound was enlarged, cleaned out, syringed with weak salicylic solution (1 in 300), drainage tubes inserted, and antiseptic dressings applied, nnder 1-40 carbolic spray. Till the 12th, temperature ranged between 96·8° F., and 98·6°; the urine was dark coloured at first, but became normal. The wound dressed as above.

13th Oct. Urine observed to be dark green in morning. All forenoon patient appeared frightened and begged the nurse to remain near her. At *2 p.m.* her whole body suddenly became slightly convulsed for two minutes, during which she was unconscious. Then patient recovered completely and resumed her meal, which had been interrupted by the fit. During the afternoon she had occasional convulsions, but no loss of consciousness. At *5·30 p.m.* she called out that a fit was coming, and immediately fell into convulsions and became insensible. At *6 p.m.* she was found unconscious, with lonic convulsion attacks, affecting the face and limbs, and rapidly succeeding each other. Respiration normal, pulse not much accelerated, pupils dilated, but sensitive to light. The antiseptic dressings were removed, sinapisms applied to the legs, an ice-bag to the head, and an enema given. Urine passed at 10 a.m. was found to have become light green, gave a red colour with nitrate of potash, slight precipitate with chloride of barium, and was non-albuminous (it did not contain

albumen at any period of the case). *11* *p.m.*, bowels acted after a second enema; but patient had not improved. The convulsions were violent, with not more than a minute's interval between them. All the muscles generally were affected; but now and then the right arm and leg remained free. The face was deadly pale, the pupils widely dilated and perfectly insensitive. Respiration shallow and irregular, with tracheal râle, most marked during the convulsions. Pulse, 160-170 per minute, weak, small, and irregular. Urine drawn off by the catheter was dark green, gave red colour with nitrate of potash, and no precipitate with barium. Patient, *quasi moribund*, was put into a warm bath, and cold douche applied to the head for three-quarters of an hour. Respiration under this treatment became deeper, the pulse fuller, and the periods of rest longer. She was then wrapped in blankets, and put to bed with hot bottles. Sinapisms were again applied to the legs, and an ice bag to the head, and an injection of 2 grm. of ether given. Temperatures gradually rose from 96·8° F., at 8 A.M. to 100° F., at 11 P.M.

14th Oct. *2 a.m.*, only a few slight convulsive twitchings of the face; patient delirious. Pupils still dilated, but regaining sensitiveness. Ordered camphor emulsion. *8 a.m.*— Patient restless all night, still delirious, and constantly tearing her hair. Urine passed in bed. Convulsions completely gone. Pulse 120; respiration regular. Urine still contains traces of carbolic acid; but the sulphates have increased. Temperature since last note about 100° F.

20th Oct.—Patient perfectly well. Urine normal.

The author's reasons for attributing the convulsions to the carbolic acid are:—(1) the onset and cessation of the symptoms coinciding with the use and disuse of the acid; (2) the changes in the urine; (3) the close analogy between the symptoms and the well-known effects of carbolic acid upon the lower animals; and (4) the low temperature (see Edelberg in *Deutsch. Zeitschr. f. Chir.* Bd. xiii).—D. M'Ph.

Treatment of Tetanus in Children by Subcutaneous Injection of Calabar Bean.

—Following an injury of the occipital region, a little girl of 3½ years was seized on the same evening with severe tetanic spasms. Dr. Silbermann, after trying as usual the hot bath and hydrate of chloral, gave a subcutaneous injection containing 2 centigrammes of the extract of Calabar bean. After two injections the spasm of the lower limbs disappeared. Two more injections caused the trismus and contraction of the muscles of the neck to

cease. The respirations numbered 60 in the minute. Next day one gramme of the following solution was injected :—

> Ext. of Calabar bean, 20 ctgr.
> Distilled water, 10 gr.

The last symptoms of the tetanus disappeared, the respirations returned to the normal, and recovery took place without further accident.

In another child of 4 years, seized with tetanus after a burn, injections of the extract of Calabar bean caused the spasms to disappear. The patient succumbed, nevertheless, to a cardiac affection, which the author considered to be a paralysis of the muscles of the heart.—*Lyon Médical.* January, 1881. J. M.

Some New Uses of Old Remedies—*Lime in the Treatment of Gout.*—In the treatment of certain troublesome forms of chronic gout, Dr. Henry March has employed, with great advantage, a preparation of lime, which he has devised to meet the requirements of those cases. It is a citrate, and is prescribed as follows :—

> ℞ Liq. calcis sacch.,   .   .   ʒiv.
>   Acid citric.,   .   .   .   ʒiv.
>   Tr. aurant.,   .   .   .   ʒii.
>   Aq. ad., ...   ℥iii.   M
> ℞ Sodæ bicarb.,   .   .   .   ʒi.
>   Pot. bicarb.,   .   .   .   ʒi.
>   Ammon. carb.,   .   .   .   ʒss.
>   Aq., ...   ℥vi.   M

Sig. A tablespoonful of the acid mixture, with two of the other, to be taken during effervescence.

In seeking to prepare a citrate, he found that unless the citric acid be added in considerable excess to the lime, the citrate becomes in a few hours converted into the oxalate. Such an acidulated citrate is not converted into chalk by the addition of carbonates of the alkalies.

To the above prescription may be added Rochelle salts, colchicum, quinine, &c., if desired ; but without any such addition Dr. March has found the swelling to subside, the turgid veins to contract, the strength of the joint to increase, and the appetite to return. The citrate of lime " seems to have an action specially tonic; an action that also appears to be of much benefit in some low sweating forms of rheumatic fever."

Treatment of Dysentery by Bichloride of Mercury.—The milder forms of dysentery, such as occur in this country, may,

according to Dr. March, be promptly cured without calomel or ipecacuanha, and without astringents, by administering every hour half a minim of the liquor hydrargyri bichloridi. The first dose often relieves the pain; in a few hours the tenesmus ceases; and on the second or third day the evacuations become normal. Seven years' experience of this remedy has confirmed him in the belief that it never fails, when thus administered.

Chloral as an Antizymotic.—From an extensive experience of chloral in fevers, Dr. March has come to the conclusions (1) that it is injurious in scarlet fever; (2) that it is invaluable in typhoid fever, when there is restlessness, &c., and he gives it in doses of not more than five grains every four hours; (3) that it is of great service in diphtheria in children, especially when there are nervous symptoms; given in quarter of a grain doses every hour.

Belladonna in Suffocative Catarrh of Infancy.—Belladonna is a stimulant of the respiratory centres; hence Dr. March has employed it in capillary bronchitis, &c., giving a six months' infant one minim of the tincture every hour, and reducing the dose as soon as improvement becomes apparent. It may be combined with ipecac., ammonia, &c.—*Medical Times and Gazette.* 19th March, 1881.—G. S. M.

Orchitis Treated by the Topical Application of Iodoform.

—Dr. Sabandi has brought before the Medical Society at Constantinople the case of a patient suffering from gonorrhœal orchitis, which he has treated with the greatest success by the application of iodoform. Patient was a hotel waiter who, for fear of losing his place, kept going about with an enormously enlarged and very painful testicle. Dr. Sabandi resolved to try iodoform after the method described by Dr. Bourdeaux in the *Archives Médicales Belges,* who affirms that under this treatment the pain rapidly disappears without the patient requiring to leave his work. Accordingly an ointment was applied consisting of one drachm of iodoform to ten of vaseline. The result was most satisfactory. The pain rapidly disappeared, the patient continuing at his work although it required him to be on his legs during the whole day. In a week later the swelling was completely gone.—(*Journ. de Méd. de Bordeaux*). *Gazette des Hôpitaux.* 12th February, 1881. J. W. A.

Nerve-Stretching followed by Death.

—About the middle of June, 1880, Professor Sury stretched the right sciatic nerve

in the usual way, in a patient who presented all the ordinary symptoms of locomotor ataxy. The wound did not heal by first intention, though Lister's treatment was faithfully carried out; nevertheless, as the pain in the right leg, for the relief of which the operation was performed, was entirely removed, the result was regarded as satisfactory. The pains in the left limb persisted, however, and Professor Sury had determined to operate on the left sciatic nerve also, when the patient died suddenly, fifteen days after the operation on the right nerve. At the autopsy numerous emboli, which had their origin from a thrombus occupying the whole of the crural vein, were found in the lungs.—(*Correspbltt f. Schw. Aerzte.*) 2nd Sept., 1880. *Lyon Médical.* 20th Feb., 1881.

Resorcin in Infantile Cholera.—Dr. Soltmann describes resorcin as a remedy of great value in infantile cholera, basing his observations on 91 cases treated by it in Breslau, in the summer of 1880, in which his mortality was 15·4 per cent. He combined it with stimulants (subcutaneous injection of ether) in cases of extreme collapse. His conclusions regarding its use are these :—(1.) That resorcin arrests the vomiting in a very short time; (2.) that the phenomena of collapse pass off : (3.) that the stools become less frequent; (4.) that it is an antizymotic like carbolic acid, but is not an irritant, and does not give rise to signs of poisoning when given in therapeutic doses, as carbolic acid not unfrequently does; (5.) that patients take it readily, that the stomach tolerates it, and that under its influence the digestive tract quickly regains its assimilative powers.

To children aged only a few months resorcin may be given in doses of 10-30 centigrammes ($1\frac{1}{2}$-$4\frac{1}{2}$ grains) in 60 grammes of infusion of chamomile. The beneficial action of the drug manifests itself in the course of a couple of days, and recovery takes place usually in about six days.—(*Bresl. Aerztl. Zeitsch*). *Lyon Médical.* 20th February, 1881.

Hypodermic Treatment of Hæmorrhoids with Carbolic Acid.—This method of treatment is again noticed in the pages of the *Med. and Surg. Reporter*, 22nd January, 1881. Dr. J. C. Batdorf states that he has treated over fifty cases in this way, all of which were cured, and no bad results followed. The solution he employs is made by melting two drachms of pure carbolic acid crystals by means of heat, and adding twenty-five drops of pure olive oil. A solution of this strength is employed in order to secure the rapid and perfect

coagulation of the contents of each little tumour; with a weaker preparation, coagulation takes place slowly and imperfectly, when there is risk of a small coagulum finding its way into the circulation, and so causing embolism. With a strong solution no such risk is run. Each tumour should be injected near its centre, to avoid any likelihood of penetrating the bowel. Only one tumour should be treated at a sitting; and, according to its size, the number of drops required will vary from eight to fifteen. The tumour injected first hardens, then ulcerates and sloughs off, usually painlessly. The bowels should be kept rather relaxed, and the parts scrupulously clean.

Mode of Action of Salicylate of Soda in Acute Rheumatism.—Prof. A Vulpian holds that the undoubted good effects of salicylate of soda in acute rheumatism are due to the action of that salt on the anatomical elements which enter into the formation of the joints, and which are primarily affected in the disease. These elements, when the salt is incorporated with them, are enabled to resist the particular kind of irritation which gives rise to acute articular rheumatism. Joints which have not been attacked will, if they have been sufficiently modified by the salicylate, as a rule, escape; in those already involved the irritation will rapidly subside, and when this has ceased the articular pains disappear, the swelling falls, and in a short time fever departs. Nevertheless, the disease is not radically cured when these manifestations have been overcome, as is proved by the occasional return of the pains, &c., when the medicine is omitted for a short time, and by the occurrence of pleurisy, pericarditis, or endocarditis, even while the patient continues to take the salicylate.—*Bull. Gén. de Thérap.* 15th February, 1881.

Significance of Uriniferous Tube Casts.—Dr. J. Tyson makes the following general statements (in *Boston Med. and Surg. Journal*) regarding the clinical significance of the different forms of casts.

1. Hyaline casts are found in all forms of Bright's disease, as well as in temporary congestions of the kidney, active or passive.

2. Epithelial casts are found in acute, subacute, and chronic parenchymatous nephritis. In the latter two forms the cells are generally degenerated and fragmentary.

3. Blood casts are found in acute parenchymatous nephritis, and when hæmorrhages have occurred in the kidneys.

4. Pale granular casts are found in interstitial nephritis, and chronic parenchymatous nephritis.

5. Dark granular casts are found in parenchymatous nephritis, acute and chronic, and rarely in interstitial nephritis.

6. Waxy casts are found only in chronic Bright's disease, and attend either of the three principal forms.

7. Oil casts are found in subacute and chronic forms of Bright's disease, and may attend any of the three principal forms, but are most numerous in chronic parenchymatous nephritis (fatty kidney).

8. Free fatty cells and free oil drops are found in chronic parenchymatous nephritis.

9. The form of fatty cell known as the compound granular cell, is found in acute and chronic parenchymatous nephritis.

In the diagnosis of renal disease it is to be understood that the quantity of urine and its chemical characters, as well as the clinical history, are to be considered ; still in many cases a diagnosis can be made from the urine alone. In every instance in which the urine contains a trace of albumen it should be carefully examined for casts.—*The Practitioner.* March, 1881.

A Statistical Inquiry into the Action of the Bromides in Epilepsy.—Dr. Hughes Bennett has two articles on this subject which appear in the *Edinburgh Medical Journal* for February and March respectively of this year. He summarises his conclusions thus :—1. In 12·1 per cent of epileptics, the attacks were completely arrested during the whole period of treatment by ·the bromides. 2. In 83·3 per cent the attacks were greatly diminished both in number and severity. 3. In 2·3 per cent the treatment had no apparent effect. 4. In 2·3 per cent the number of attacks was augmented during the period of treatment. 5. The form of the disease, whether it was inherited or not, whether complicated or not, recent or chronic, in the young or in the old, in healthy or diseased persons, appeared in no way to influence treatment, the success being nearly in the same ratio under all these conditions. 6. In 66·6 per cent there was no trace of bromide poisoning. In the remaining 33·4 per cent this was observed in varying kinds and degrees, but in no case to any serious extent, namely, physical weakness in 28·5 per cent (*i. e.*, a feeling of languor and fatigue with general muscular debility, which often passed off while the drug was still continued, and always if it was stopped for a time); mental weakness (*i. e.*, depression, drowsiness, &c., also temporary) in 18·8 per cent, and the so-called bromide eruption in 16·6 per cent.

Books, Pamphlets, &c., Received.

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Healthy Homes. By Stanley Haynes, M.D., M.R.C.S. London : Baillière, Tindall & Cox. 1881.

A Guide to Therapeutics. By Robert Farquharson, M.P., M.D. Second Edition. London : Smith, Elder & Co. 1881.

Manual of the Physical Diagnosis of Diseases of the Heart, including the Use of the Sphygmograph and Cardiograph. By Arthur Earnest Sansom, M.D. Third Edition. London : J. & A. Churchill. 1881.

The Bacteria. By Dr. Antoine M'Guire, translated by George M. Sternberg, M.D., Surgeon U.S. Army. Boston : Little, Brown & Co. 1880.

The Transactions of the Edinburgh Obstetrical Society. Vol. V, Part I. Session 1877-78. Edinburgh : Oliver & Boyd. 1878.

Fasting and Feeding, Psychologically considered. By L. S. Forbes Winslow, M.B. Cantab., D.C.L. Oxon. London : Baillière, Tindall & Cox. 1881.

Aids to Diagnosis. Part I. Semeiology, specially designed for Students preparing for Examination. By J. Milner Fothergill, M.D. London : Baillière, Tindall & Cox. 1880.

Aids to Diagnosis. Part II. Physical Diagnosis, specially designed for Students preparing for Examination. By John C. Thorowgood, M.D., F.R.C.P. London : Baillière, Tindall & Cox. 1881.

Aids to Rational Therapeutics, specially designed for Students preparing for Examination. By J. Milner Fothergill, M.D. London : Baillière, Tindall & Cox. 1881.

Surgical Cases, mainly from the Wards of the Stamford, Rutland, and General Infirmary. By Wm. Newman, M.D. Lond., F.R.C.P. Eng. London : H. K. Lewis. 1881.

On the Treatment of Nævi by Electrolysis. By the same Author. London : H. K. Lewis. 1881.

Experimental Researches on the Temperature of the Head. By J. S. Lombard, M.D., formerly Assistant Professor of Physiology in Harvard University. London : H. K. Lewis. 1881.

Transactions of the Obstetrical Society of London. Vol. XXII. For the year 1880. With a list of Officers, Fellows, &c. London : Longmans, Green & Co. 1881.

Collected Works of Francis Sibson, M.D. Lond. Edited by William M. Ord, M.D., with Illustrations. In Four Volumes. London : Macmillan & Co. 1881.

DIAGRAM VI.

OVALBUMEN

T 0°C

SERUM ALBUMEN
T 25°C

ALBUMINOUS URINE
T 50°C

DIAGRAM VII.

SALT

NITRIC

HYDROCHLORIC

T 50°C 80°

30°C

T 20°C

T 0°C

URIC

3   2   1
ALKALI

ACID

HYDROCHLORIC ACID
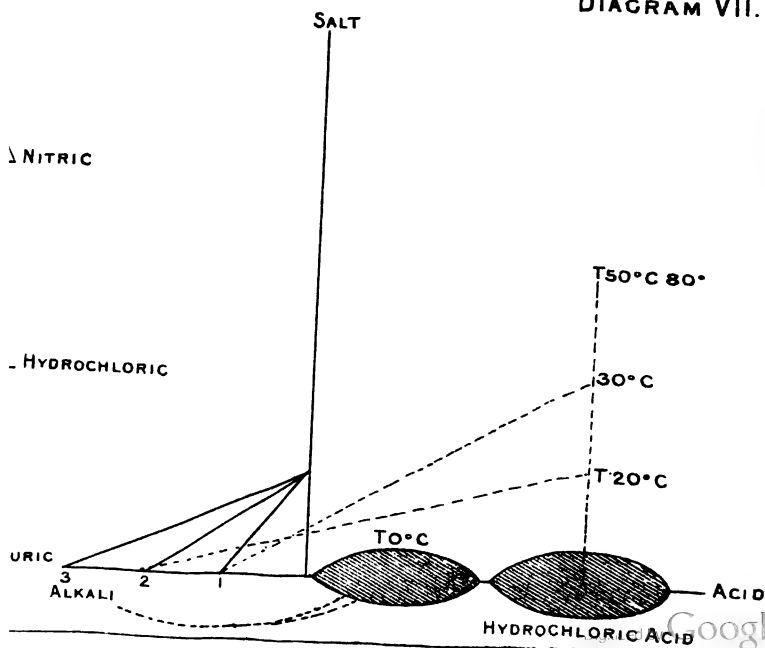
ORIGINAL ARTICLES.

RESEARCHES ON ALBUMEN; WITH SPECIAL REFERENCE TO ALBUMINURIA.

By ROBERT KIRK, M.D., PARTICK, GLASGOW,
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(Read before the Medico-Chirurg. Society of Glasgow, 4th February, 1881.)

IN the course of an investigation of certain properties of albumen, I was led to examine the comparative delicacy of our tests for it in urine. Some account of this will form the best introduction to what I shall have to lay before you on the general reactions of proteids. Considerable dissatisfaction has been expressed by various authors with regard to those tests. Dr. Roberts, of Manchester, more especially, has proved that even the nitric acid test in the cold is deficient in delicacy, although he considers it the best we possess for those cases in which it is applicable. He found that when he diluted an albuminous urine with water, he could trace the albumen further than when he diluted with normal urine.* Repeating this experiment, I found the same difference in the delicacy of the test in the two cases, and that it was frequently very considerable. Dr. Roberts attributes this to the presence of the solid ingredients of the urine, and no doubt this is so; but it appeared that there were some of these more especially concerned in this result than others. Passing over this in the

* *Urinary and Renal Diseases,* pp. 123, 124.

meantime, however, I ascertained, on further investigating this subject, the following facts :—

1. When an albuminous urine is treated with alkali, the albumen becomes more coagulable by acids, and by and bye can be precipitated in the cold by hydrochloric and even acetic acid.

2. The degree in which this effect is produced is in proportion to the amount of alkali used, the highness of the temperature, and the time during which the alkali is allowed to act. Thus, a quantity which will produce a given effect at once at a boiling temperature, will take a considerable time to do so at lower temperatures, and the effect of the boiling continues after the liquid has cooled down to any temperature, however low. In these experiments I never found alkali albumen to be produced, that is, an albumen yielding a precipitate on neutralisation which dissolves in dilute acid. On the contrary, the acid required to be added in excess of the alkali to produce coagulation. In this respect, it will be observed, the reaction resembled that of caseine, or of alkali albumen in the presence of alkaline phosphates, which is not precipitated till the solution is acid from the presence of free acid. While the albumen was thus rendered coagulable by acetic acid at ordinary temperatures, it was found that nitric acid had also a greater power to coagulate it than before, and that its delicacy as a test was much improved. Soda was found the best alkali for the purpose, as it threw down, along with the earthy phosphates, any free or loosely combined uric acid in the form of the insoluble urate of soda, and thus left a clear field in which the test produced very little reaction except with the albumen. On this principle is founded the following test, which will be found more delicate than the usual nitric acid test, and applicable to all conditions of the urine.

Alkali and Acid Test for Albumen in Urine.—Add to half an ounce (14·2 c.c.) of the urine, 5 to 10 drops of a saturated solution of caustic soda ; boil and allow to cool, and the precipitate of phosphates and urates to settle down ; pour off some of the clear supernatant liquor and test it in the usual way with nitric acid ; namely, by allowing the acid to trickle carefully down the side of the tube, held apart from the perpendicular, till it forms a separate layer at the bottom of the urine. Instead of pouring off the supernatant liquid, we may filter, either before boiling, or after boiling and cooling. The liquid may be cooled rapidly by immersing the tube in water, or by directing a stream of water on it from a water

pipe. It is convenient to have half an ounce of urine in a rather long test tube, so that the upper part may be easily poured off free from any of the precipitate. The soda solution, of which 5 to 10 drops (small drops like those from a burette), were found necessary, was nearly equivalent to $\frac{1}{3}$ its volume of hydrochloric acid. Much less than this will make the urine alkaline, but this quantity seems necessary to produce the reaction. On the other hand, too much must not be used, as in that case the nitrate of soda, formed where the two liquids meet, would not be all kept in solution, and would of itself give a precipitate. If now an albuminous urine be diluted either with water or normal urine till the albumen shows but as a trace with nitric acid, taking, let us suppose, five minutes to come into view, it will be found after boiling it with the alkali that the albuminous reaction appears instantly. It will even be found that hydrochloric acid, used in the same way as nitric, is as delicate a test as the latter acid was previously. If the dilution be now carried twice, or even three times as far, the albumen will still be clearly detected. I should state that in a watery dilution less soda is necessary, and potash or ammonia will do equally well. Before diluting with normal urine, it is well to observe the effect of the test on the latter alone. The soda makes the urine of a deeper yellow colour; in a few cases it becomes of a reddish-brown. The nitric acid, after the soda, gives little reaction with colouring matters, and generally little with urates. It is evident there must be a formation of nitrate of soda above the acid, and this is shown by a zone of a slightly different colour from the clear acid below or the yellow urine above. This has a sort of grey colour, but when too much soda is not used there is no precipitate, and no appearance which could be taken for albumen. After the soda the albuminous zone of reaction forms a broader band than before, and there is generally a slight ring above, showing a trace of remaining urates. This sometimes lies so high as to be quite separate, but sometimes looks like the upper part of the albuminous zone, to which it then gives a double outline. On account of the tendency of the albuminous opacity to diffuse upwards after the soda, the acid should be poured in very gently.

With hydrochloric acid there is also an upper zone of urates, which rises higher than in the case of nitric acid. Sometimes also there is a violet reaction with colouring matters, and when such is the case the acid is a much less delicate test, a proof that the reaction with colouring matters also impairs the delicacy of the nitric acid test. After the soda the albumen

also coagulates readily with sulphuric acid; but there is now a reaction not only with colouring matters and urates, but also with lime salts, forming an insoluble sulphate immediately above the acid.   There are thus four zones of reaction possible with an acid in an albuminous urine; first, an insoluble salt; second, colouring matters; third, albumen; and lastly, urates. These always occur in the same order from below upwards, and the lowest are those which interfere most with the albuminous reaction.   They are all present with sulphuric acid, and would account for its inferiority as a test to hydrochloric acid, supposing the albumen itself to be equally coagulable by both.

Metaphosphoric acid has been proposed as a delicate test for albumen in urine, and I made some careful comparisons of it with nitric acid.   I found it best, at the suggestion of a chemical friend, to use a saturated watery solution, which is a clear, heavy, liquid, having a sp. gr. of 2, and which therefore runs easily down to the bottom of the test tube like nitric acid.   But I found that although it had great power to coagulate the albumen there were frequently constitutents in the urine, principally, I believe, salts of lime, which greatly interfered with its action, and not only so, but produced non-albuminous precipitates which might easily have led into error.   I met with cases which gave very distinct reactions with nitric acid and none at all with metaphosphoric acid. I found the soda also useful, therefore, with this acid, and in dilutions with normal urine it frequently appeared to be more delicate, after the soda, than nitric acid.   But after comparing the two in a variety of cases, I found the former not uniform, and this seemed due to a precipitation of a lime salt, even after the soda had been used.

Picric acid is said to be a delicate test for albumen, and in all instances in which I have compared it with the others, I have found it so.   It also is best used in the form of a watery solution, which is light, and when allowed to run down the tube like the others, flows gently over the surface of the urine, when, if albumen be present, it shows itself by the formation of a narrow, greenish zone, where the two liquids meet.   It forms in a minute, even when albumen is present in only the smallest quantities, and I have never seen anything in a non-albuminous urine which could be mistaken for it.   It is not so applicable where there is turbidity from urates or phosphates; but in a comparatively clear urine I have always found it as delicate as the alkali and acid test, perhaps fully more so, while it is much less troublesome.   But I should

mention that the most delicate test is not necessarily that which gives the largest precipitate when more than mere traces are present. When the albumen is in sufficient quantity to be recognised by nitric acid, the precipitate is often bulkier than that given by picric acid, although it can be detected by the latter after greater dilution than by the former.

The effect of the alkali on the albumen as used in the test, led to further investigation of the subject of alkali albumen. I found that if, instead of boiling the urine with the alkali, I allowed it to operate at ordinary temperatures, the same result was sometimes not produced after 12 or even 24 hours. But if the quantity of alkali was made double that used in the test, the albumen coagulated with acetic acid in about 4 hours. When tested by hydrochloric acid at successive intervals during this time, it was found to be gradually becoming more coagulable by it. In the course of these experiments it was observed that the proteid was never precipitated on neutralisation, which is the characteristic reaction of ordinary alkali albumen. When ovalbumen or serum albumen was treated in the same way they gave a precipitate on neutralisation which dissolved in either dilute acid or alkali. At a boiling temperature this effect was produced with very small quantities of alkali, quantities which seemed to have no effect of any kind on albuminous urine. There seemed to be a very decided difference between albumen in the urine and serum albumen with regard to the action of alkali, and an equally great, if not greater difference was also observed with acids, acid albumen being formed with the latter under circumstances which produced no such result with albuminous urine. Before treating this subject in detail I must request your attention to some experiments which were performed on the coagulation of albumen by heat and acids, which will serve to render the subject more intelligible.

We read of various anomalies in the behaviour of albumen with heat and acids, and many cautions are given against using too much or too little acid. With the view of determining the degree of acidity required in different instances, comparative experiments were made with albuminous urines, giving a precipitate of $\frac{1}{2}$ or $\frac{1}{3}$ of the tube; and with 1 in 20 dilutions of ovalbumen, blood serum, and serum from blistered surfaces, which also gave precipitates of about $\frac{1}{2}$ or $\frac{1}{3}$ of the tube. The dilute ovalbumen was prepared by breaking up white of egg thoroughly, removing the froth and mesh-work, and filtering from the globulin which was precipitated by the dilution. All the globulin, except, perhaps, mere traces, was

got rid of in this way.   Concentrated ovalbumen coagulates on boiling, but a 1 in 10 or 1 in 20 dilution in water does not, but gives only a slight haze.   It now requires, for perfect coagulation on boiling, the addition of a small quantity of either salt or acid.   Both may be used together, but either will do singly.   You are all aware of the statement made by Schmidt, that the small quantities of saline matter which are always associated with the albumens may be removed from them by dialysis, when they are no longer coagulated by heat. This has been much controverted,[*] and I may state that in a number of experiments, carried on chiefly by a chemical friend, who has frequently co-operated with me, we never met with an instance in which some coagulation did not take place on boiling, even after prolonged dialysis.   But we generally found that the albumen coagulated much less perfectly than before, while the addition of a little salt made it coagulate as well as at first.   Although, therefore, it may not be possible to remove all the salt by dialysis, it would seem as if it were essential to the coagulation, and that Schmidt's observation is a very important one.   Indeed, it would appear that we can attribute the non-coagulability of the dilute ovalbumen to nothing but the dilution of the salt.   Add to half an ounce of it (14·2 c.c.) 5 minims of saturated saline solution, and it again coagulates perfectly on boiling.   Similarly, concentrated blood serum coagulates on boiling, but, as in the case of ovalbumen, when diluted to 1 in 20 of water it does not.   It requires, like the former, the addition of 5 minims of saturated saline solution to the half ounce, or 2 or 3 drops of dilute acetic acid.   According to Mathieu and Urbain the carbonic acid dissolved in the albu- men combines with it under the influence of the heat, and is the cause of the coagulation.   Solutions of albumen, deprived of carbonic acid by being placed in a vacuum, become incoagu- lable.[†]   If this be so, is the amount of carbonic acid present in the serum so far reduced by dilution to 1 in 20 of water, as to render the albumen incoagulable, as happens with the salt in the case of ovalbumen?   It would appear so, for I found that when the serum globulin is thrown down by passing a stream of carbonic acid through the liquid, which is thus satu- rated with the acid, the albumen again coagulates with heat. But it is important to bear in mind that the same dilute serum coagulates with the addition of a very few drops of saline

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[*] Gamgee's *Physiological Chemistry,* vol. i, p. 63 ; and Foster's *Physi- ology,* &c.
[†] Quoted in M'Kendrick's *Physiology,* p. 695, from which the statement is taken.

solution, and I believe I shall advance reasons for supposing that dilute acid is never the sole agent, but that the salt present, however small its quantity, is always a factor. Experiments were conducted with this dilute serum before separation of the globulin by carbonic acid. The blister serum (from blistered surfaces) was diluted to the same extent, and any globulin precipitated by dilution was removed by filtration. These dilutions gave a precipitate of $\frac{1}{3}$ to $\frac{1}{2}$ of the tube.

I now proceeded with equal quantities ($\frac{1}{2}$ oz. $= 14\cdot2$ c.c. of each) of these 4 albuminous solutions; namely—(1.) neutral albuminous urine; (2.) dilute ovalbumen; (3.) dilute blood serum; and (4.) dilute blister serum (the latter three slightly alkaline). Boiling these and adding a drop of 28 per cent acetic acid at a boiling temperature, I found they all coagulated except the last, which remained perfectly fluid. Even after dilution with only 8 or 10 volumes of water this blister serum would not coagulate on boiling, with or without a drop of acetic acid, and the same result was observed with various specimens. With a few drops of saline solution, with or without acid, it coagulated perfectly. I was surprised at this result, but my friend, the Rev. Mr. Gibson, performed an experiment which threw new light on the matter. Repeating the boiling of this serum, and observing that on adding the acid a precipitate apparently formed and re-dissolved, he was induced to try a drop of dilute acetic acid, when he found that the albumen coagulated. He also found that if the same drop of dilute acid was added before boiling no effect was produced. Now it is well known that solutions of globulin must be very cautiously treated with dilute acid on boiling to produce coagulation; but there was no globulin in this solution, which gave no precipitate with a stream of carbonic acid or by saturation with salt. The fact that it coagulated with more acid if salt were also added, pointed to the conclusion that the acidity must bear a certain proportion to the salt present. To use a large quantity of salt and acid is a well known method of precipitating the proteids; but nevertheless the true relation of salt to acid in the process in all cases, and more especially the fact that the acidity must be reduced if the salt be partly removed by dialysis, does not seem to be generally recognised. I think this will be apparent from the following experiments, performed with the view of elucidating this point.

Mr. Gibson found that the blister serum coagulated equally well with acetic, nitric, hydrochloric, or sulphuric acid, if sufficiently diluted, a drop of 1 per cent sulphuric acid being

enough. If a drop more was used the albumen remained in solution and passed at once, at the high temperature, into acid albumen. Repeating the experiment with ovalbumen and blood serum, I found that although they had coagulated with a drop of acetic acid, the result was much better when only one or two drops of dilute acid ($3\frac{1}{2}$ per cent) was used. It was observed in this case also that if the drop of strong acid was added *before* boiling no coagulation took place. With albuminous urine it was found that coagulation could be produced with much larger quantities of acid, and that there was a very considerable range between the minimum and maximum of acid which might be used. It also appeared that when an excess of acid was employed a change in the character of the precipitate was manifested, long before a quantity of acid was reached which kept the albumen in solution. The range of acidity frequently extended from 2 or 3 drops of dilute, to 12 or 15 drops of strong acetic acid, the maximum therefore being 30 or more times greater than in the case of the other two. Now, it is evident that the urine contained a very much larger quantity of salts than the other solutions, over and above the urea, which would probably have much the same influence as a salt. It was found, after removal of most of the salts and urea by dialysis, and the reduction of the specific gravity to 1002 or 1003, that the acidity required to be reduced to $\frac{1}{50}$ or $\frac{1}{100}$ of the former maximum, a drop of 1 per cent acetic acid being all that was necessary, while a larger quantity now produced fluidity. This almost infinitesimal quantity of acid was, however, essential, coagulation not taking place without it. At the same time it must be confessed that coagulation was sometimes imperfect after the most careful regulation of the acidity. If salts were again added to the urine more acid could also be used. It was remarkable that after dialysis of albumen the acidity required was not reduced to so small a quantity as in the case of urine. Thus, ovalbumen ($\frac{1}{2}$ oz. of 1 in 20 dilution) was found to coagulate with a drop of 1 in 20 hydrochloric acid, a drop of 1 in 10 dilution keeping it in solution and producing acid albumen. After 48 hours' dialysis the necessary amount of acid to produce coagulation was reduced to a half of what it was formerly, or a drop of 1 in 40 hydrochloric acid, 1 in 20 now causing fluidity. Albuminous urine will coagulate with a drop of strong hydrochloric acid as a rule, or at all events after the acid is diluted with one or two volumes of water; after dialysis this may be reduced to 1 in 50, or less. It would appear from this that there is a larger amount of salt in intimate

combination with the ovalbumen which it cannot be so readily robbed of by dialysis.

I never found, when the acid was used in such excess in the urine as to keep the albumen in solution, that it passed into acid albumen, as the others had done. What, moreover, was the explanation of the fact that a quantity of acid which had no effect in causing coagulation if added *before* boiling might do so if added at the boiling point ? This was found to depend on the acid being in excess ; if in proper quantity, it does not matter when it is added. But when in excess it produces no result if added before boiling, as it is everywhere diffused before the temperature which produces coagulation is reached, and so keeps the albumen everywhere in solution. But when added to the boiling liquid (without shaking), it acts unequally owing to its unequal diffusion, and it is remarkable how slowly it diffuses, especially when much salt is present. Where the drop falls, therefore, and where the acid is in excess, the albumen is kept in solution ; but further away, in parts to which the acid comes in smaller quantities, the precipitate forms, and having once formed, the excess of acid cannot altogether re-dissolve it after complete diffusion has taken place.

The fact, already alluded to, that the character of the pre-cipitate changed as the acid was increased, before the quantity became so great as altogether to keep the albumen in solution, requires further attention. It was found that the changes produced by varying quantities of salt and acid were very considerable. These will be best explained by a reference to the accompanying diagrams, in which I have attempted to illustrate the several effects on albumen thus far recorded. The salt and acid may be compared to two forces acting on a body at right angles to each other. Let A (diagram I), be the albumen, A C the line of action of the acid, and A S the line of action of the salt. Suppose A to be a body, as a ball, free to move in any direction, and the acid and salt to be forces pulling it in the directions A C and A S respectively. It is obvious that the movement of the body will be the resultant of the two rect-angular forces, and that this may be any line between A S and A C. This, I think, represents accurately what takes place every time we boil an albuminous urine. There is reason to believe the effects may be as various as the different resultants lying between A S and A C. If the resultant be in one direc-tion we have a certain effect on the albumen; if in another direction there is a different effect. These various effects, however, pass by such insensible gradations into each other

that it is only at certain intervals they become so pronounced that we can fully appreciate the difference, and it will be sufficient to single out two or three for especial notice. And first of all let me request your attention to the resultant A–P which bisects the angle S A C. This is the resultant of the two forces when they are equally balanced, and it is that which produces perfect precipitation of the albumen. With this resultant we have the perfect flaky or curdy precipitate, and a clear supernatant liquid, and this is the result which should always be attained when we use heat and acid as a test. But if the acid be in excess, and the resultant inclines towards A C, as the line A–P G, the precipitate undergoes a change, the flakes becoming viscid or gelatinous, until finally, with a sufficient amount of acid, the flakes are lost sight of altogether, and the precipitate becomes a homogeneous, gelatinous mass. This precipitate does not settle down, nor become visible for some time—it may be several hours after boiling. During the boiling, and for some time afterwards, the albumen appears to be in perfect solution, but it is found that it does not pass through the filter, and that it throws down this gelatinous precipitate after a length of time. This precipitate may generally be obtained with 20 to 30 minims of acetic acid. It will be observed that this reaction resembles that shown by the form of albumen to which Bence Jones has given the name of metalbumen. If the acid be in still greater excess, we have the resultant A–A F, or what we may call the acid fluidity, the albumen now giving no precipitate whatever.

If we now add salt beyond the proportion which gives the flaky precipitate and produce such a resultant as A–P S, the precipitate becomes sandy or finely granular. This is better seen in albuminous urine than with ovalbumen or serum albumen. In the latter two a very little salt alone coagulates the albumen, and the precipitate takes the form of lumps or masses, the entire liquid becoming extremely viscid. But if an albuminous urine be neutral, it will seldom coagulate on boiling, even with large quantities of salt, and I have met with instances in which, after saturation with salt, it refused to coagulate on boiling till the acidity was made greater than before. Sometimes, however, I have found the neutral urine to precipitate, wholly or partially, after saturation with salt. It has sometimes appeared to me that the after dinner urine was more prone to do so than the morning urine, but I would not speak positively on this point, as the greater quantity of albumen in the urine in the former case may have had a good deal to do with the result. But if any change in the pro-

portion of acid to salt causes a change in the direction of the resultant, and so in the character of the precipitate, how was it that perfect precipitation might be obtained with a considerable range of acidity, the quantity of salt remaining the same? To explain this it was found necessary to take into account the effect of the temperature. Observe that there are two things to be considered in connection with the resultant; (1) its intensity, and (2) its direction. The former depends on the sum of the two forces; the latter on their relative amounts. Thus (diagram II), if the salt be 4 and acid 4, the resultant will be in the same direction as when the former is 6 and the latter 6, but the resultant will now be one of greater intensity. In both cases there will be perfect precipitation of the albumen, but with the weaker resultant a higher temperature will be required. As long as the two forces are in the proportions to give the resultant A P, their effect is intensified by the temperature to such an extent as to produce coagulation, however small the sum of the two. But as the sum of the two forces increases, the temperature falls. Thus, if the temperature be 70° C. when salt and acid are each 4, it will be lower, say 60° or 50°, when the salt and acid are 6 or 8 each (diagram III.) But if the salt be 4 and acid 6, it is evident that the resultant will be in a different direction, as A–P G, at least at the same temperature as before—namely, 70° (diagram II.) If, therefore, the same resultant is still obtained, it will be at a different temperature, and it was observed that as the acid was gradually increased the temperature of coagulation fell as long as the character of the precipitate remained unchanged. Thus it happened that 4 of salt and 6 of acid might give the same resultant, A–P, at 60°, as 4 of each did at 70°. This is represented in diagram II, where A–P G is the resultant of 4 of salt and 6 of acid at 70°, and A–P the resultant of the same at 60°, the curved dotted line indicating the veering round of the resultant with the change of temperature. But if the excess of acid be too great, so that the salt present cannot counteract its tendency to keep the albumen in solution, we observe that the temperature of precipitation does not fall further, but the precipitate gradually assumes a different character. This does not become evident, however, till there is a considerable increase of acid. It must be observed that the acid used in these experiments was acetic acid.

The following experiments will serve at once to illustrate these principles and show the proofs on which they are based.

1. If salt and acid be both increased, the temperature of coagulation falls in proportion. This is well known, and

experiments showed that the temperature might thus be reduced from 90° C. to 30° or 20°.

2. If the salt be made a fixed quantity, precipitation may be obtained with various qualities of acid, but the temperature falls as the acid is increased. Half an ounce of a neutral albuminous urine, with one drop of acetic acid, became turbid at 70°, coagulating fully at 80°; with four drops of the same it became turbid at 60°, full coagulation, 70°. With increase of acid, therefore, the temperature had fallen 10°, the character of the precipitate remaining the same. When the acid was still more increased no further fall of temperature resulted, but the precipitate gradually assumed the gelatinous form. It even appeared, when the quantity of acid became consider-able, that the temperature of precipitation rose somewhat, but it was observed that a faint turbidity still appeared at a low temperature, and that its character was different. Instead of appearing as flakes shooting through the tube, a uniform opacity spread through it, extending over a range of tempera-ture of 40° before the turbidity became denser. When the amount of acid became sufficiently great (30 drops of acetic acid from a burette $= 12$ minims), the urine remained altogether transparent, depositing a perfect gelatinous pre-cipitate on cooling. An interesting fact was observed with this quantity of acid. On boiling *slowly* the liquid became turbid at 70° to 80°, but did not become dense even at 100°, so that the bulb of the thermometer was never altogether hidden, and the precipitate took the form of viscid gelatinous flakes. Boiling another specimen *rapidly* with the same amount of acid, it remained perfectly transparent throughout and gave no precipitate till it cooled. The reason of this is evident. The acid, being in excess, had a greater tendency to keep the albumen in solution at the high temperature, and by passing too suddenly the temperature at which the resultant of precipitation was produced, fluidity was the consequence. Hence, it sometimes happens, with excess of acid, that the precipitate which forms at a certain temperature partially redissolves when we reach a higher. The same principle also explains why a precipitate may appear only on cooling, since the liquid again passes slowly through the same range of temperatures, though in the reverse direction. The precipitate would certainly have appeared had the temperature not been raised too rapidly in the first instance.

Instead of only reducing the temperature 10° by increase of acid, as in the above experiment, it might have been reduced much further by adding more salt at the commence-

ment. This widens the range of temperature of precipitation, and by raising successive quantities to various temperatures, as 90°, 80°, 70°, 60°, &c., and adding acid at each of these temperatures, it may easily be proved that the higher the temperature the less the amount of acid required; or, which is the same thing, that the temperature falls as the acid is increased. Increase of salt, the acid remaining the same, also as a rule lowers the temperature, but in albuminous urine at all events this is not invariable.

The facts thus far recorded favour the idea that in the entire absence of salt, dilute acid would probably not coagulate albumen at any temperature. Along with salt it brings about coagulation; but alone, or in a certain excess over salt, it keeps the albumen in solution, but reduces it to a state in which it is more coagulable by salt at low temperatures than before. In the same way I have found that after the prolonged action of a certain quantity of salt the albumen coagulates more readily with acid. It has been shown that it does not require a very large amount of salt to effect coagulation on boiling without acid, but it is evident that the latter combines to produce the same result with a small quantity of salt not of itself sufficient to do so. This precipitate, therefore, may be called the *salt and acid* precipitate. A precipitate apparently due to salt alone, as when we boil dilute ovalbumen with 5 minims of saturated saline solution, or any larger quantity, may be called in contra-distinction the *salt* precipitate. This is represented in diagram IV, where it will be observed that in the case of albuminous urine this is very small, as if neutral it sometimes coagulates very imperfectly even after saturation with salt.

The solubility of the salt and acid precipitate in acids depends essentially on the same principles which determine its formation. Thus, if the acid be already somewhat in excess of salt, the precipitate will necessarily be readily soluble in additional acid, especially at a high temperature. On the other hand, if salt be in excess, additional acid will sometimes have the effect of increasing the precipitate till the resultant is brought into the line A–P. When the salt and acid are properly balanced, the precipitate will be insoluble in acid in proportion as it was originally formed by large quantities of both agents. The insolubility in acid, in short, must always be in proportion to the amount of salt present. Whenever by inadvertence we use an excess of acid in testing, this can be at once counteracted by adding salt—a fact recognised in the tests given in some text books. It must be remembered that the precipitate is always most soluble at the moment of its forma-

tion. Some of the supposed anomalies in the action of heat on albumen will be found, it is believed, to be explained by these principles.

We constantly read of proteids separable by mere boiling, but it would appear that elevation of temperature alone is never to be considered the principal agent, but that its effect always depends on the presence and relationships of other forces. In the same way we read of the precipitation of albumen by the mineral acids without any reference to temperature, but as I shall have occasion to mention presently, these acids act much more energetically at high temperatures. It is obvious, therefore, that all the factors concerned in the result must be taken into consideration.

I next proceeded to determine whether albumen occurring in urine would not, after dialysis, pass into acid albumen, with large quantities of hydrochloric acid and boiling. In doing so it was found that when the acid rose to a certain amount the albumen was again precipitated on boiling. That is to say, a small quantity of hydrochloric acid, not exceeding a single drop to the half ounce of urine, gives the salt and acid precipitate, any excess over this producing the acid fluidity, but a third and still larger quantity again precipitates the proteid. This precipitate was of a dirty violet colour in dialysed urine, and dissolved in excess of hydrochloric or sulphuric acid. When the amount of acid became sufficiently large (about equal volumes of acid and urine), this precipitate did not appear, the albumen again remaining in solution. The precipitate, with successive quantities of acid, gradually became larger till a maximum point was arrived at, beyond which it became gradually smaller till the second fluidity appeared. This is figured in diagram V, where will be seen along the acid line (1) the salt and acid precipitate; (2) the first acid fluidity; (3) the acid precipitate passing gradually into the fluidity at the two extremes; and (4) the second acid fluidity. We are told in text books that the strong mineral acids precipitate albumen, and also dissolve it, but the proportion of acid which produces any result, together with circumstances of time and temperature, seems not to be sufficiently attended to. I made a comparison of nitric, hydrochloric, and sulphuric acids, with respect to the acid precipitate in dialysed and undialysed albuminous urine, and then a comparison of the latter with ovalbumen and serum albumen. I must confine myself to the briefest summary of the results. With ½ oz. of neutral albuminous urine (undialysed) it was found necessary to have one small drop of nitric, hydrochloric, or sulphuric acid, to produce

the salt and acid precipitate. A single drop more produced fluidity. Hence, when these acids are used as a test they should be first diluted with 5 or 10 volumes of water, and of this dilution a few drops should be added cautiously after boiling. This salt and acid precipitate is always white, with whatever acid produced. When I reached from 5 to 10 drops of nitric acid, or 30 to 60 of hydrochloric or sulphuric acid, traces of the acid precipitate began to appear. This was red with all three acids on boiling, the colour depending almost entirely on the effect of the acids on the colouring matters of the urine, for the colour was pale in dialysed urines. When the maximum point of the reaction was passed, the quantities of acid being such that the precipitate began to diminish, the colour became yellow with nitric and sulphuric, and this was also the colour of the second fluidity (xanthoproteic reaction.) I may here remark that this is much less marked than with serum albumen, but more especially ovalbumen. The precipitate came at a low temperature with nitric acid, and was then white, but required a temperature of 60° to 80° with hydrochloric or sulphuric.

A comparison of ovalbumen and serum albumen, with albuminous urine (diagram VI), showed that the precipitates came with smaller quantities of acid in the case of ovalbumen than either of the other two. In all three it came first with nitric acid. In the case of ovalbumen and serum albumen, the precipitates with both hydrochloric and sulphuric acids came at a low temperature, although on boiling it was observed that traces of them appeared with smaller quantities of the acids. At the lower temperatures, however, the smaller quantities seemed to have the same effect if sufficient time were allowed. The precipitate in the case of ovalbumen began to appear at a high temperature, with 6 drops or so of hydrochloric acid, serum albumen requiring twice as much, and albuminous urine still more. But the chief difference between ovalbumen and serum albumen lay in the large amount of acid required before the second fluidity was reached with the former. It required 4 volumes of acid to 1 of ovalbumen, instead of equal volumes of each, as with the other two.

From a general view of these diagrams, it will be seen—

1. That all the spaces of precipitation are greater, and those of fluidity smaller, at high temperatures, although this is partly compensated by time at low temperatures.

2. All the spaces of precipitation are greater, and those of fluidity less with ovalbumen than serum albumen, and the same holds with regard to the first fluidity between the latter

and albuminous urine. The difference between the three may be best seen, however, by reference to temperature. Given the same amounts of each in solution, the same quantity of acid, and the same time, the precipitate requires 25° higher temperature with serum albumen than with ovalbumen, and about 25° still higher with albuminous urine.

Did time permit, it might be shown that these diagrams (V and VI) give a comprehensive view of the behaviour of albumen with mineral acids. Take an instance. It is well known that the precipitate formed by nitric acid dissolves in a large quantity of water, and you see that by diluting with water you reach the first fluidity. Similarly, the precipitate will also dissolve with additional acid, for this will bring you to the second fluidity. Again, if you add in the first instance sufficient acid to produce the second fluidity, a precipitate will form on diluting with water, re-dissolving when the amount becomes sufficiently large; that is to say, by so doing you travel, so to speak, from the second to the first fluidity. And so you may travel in the opposite direction, with the effects reversed.

It was now found that quantities of acid which produced the first fluidity were those necessary (or at all events best suited) to form acid albumen. This space, it must be observed, is wholly obliterated if sufficient salt be added, when nothing but the salt and acid precipitate forms, and acid albumen is impossible. In the case of ovalbumen and serum albumen, it was found that quantities of acid which gave no trace of precipitate on boiling produced acid albumen in one minute at 37° C. or any higher temperature. With ovalbumen the quantity of hydrochloric acid was found to be from a drop of a 1 in 10 dilution (1 in 20 producing precipitate) upwards to 4 or 5 drops of the strong acid, and with serum albumen from a drop of a 1 in 5 dilution to about 10 drops or so of the strong acid. The smaller quantities did not produce, perhaps, so perfect a result as the larger in the time specified. With albuminous urine, whether dialysed or not, it was found that no such effect was produced. It seemed to pass with difficulty, if at all, into acid albumen.

I would here observe that when acid albumen is formed, the position of the acid precipitate is not altered; it appears as before, when the acid is increased to the proper quantity. Moreover, the precipitation of acid albumen from its acid solutions by excess of sodium chloride, which is given as one of its reactions, is simply the production of the salt and acid precipitate, as before—the resultant A–P of the two forces.

Had the salt been added in the first instance, this precipitate would have formed in the same time, and at the same temperature as sufficed for the transformation into acid albumen. The effect of the acid in rendering the albumen coagulable by salt at a high temperature continues after cooling to a much lower temperature. The instantaneous production of acid albumen at a sufficiently high temperature is worthy of note. We read in books that the change into acid albumen by dilute acid is gradual, as proved by the fact that a portion of the liquid taken soon after the addition of the acid gives little precipitate on neutralisation, and still gives a precipitate on boiling. In this case, it is evident that the quantity of acid present is such as to give a trace of either the acid precipitate on the one hand, or the salt and acid precipitate on the other. I have not yet sufficiently investigated the formation of acid albumen under these circumstances, but, from the observations I have made, I am disposed to think that, if the quantity of acid is such as to produce any acid precipitate, the proteid cannot be wholly transformed into acid albumen, since the precipitate will form slowly, even at a low temperature. And if all the albumen present can be slowly changed into acid albumen at a low temperature, with a quantity of acid which, at first, gives some precipitate on boiling, this would seem to suggest that the action of the acid is an undoing, so to speak, of the influence of the salt on the albumen, and hence requires additional salt to counteract it, and again bring about precipitation. But it should be noticed that the non-coagulation of acid albumen on boiling is by no means a distinctive feature. Given a quantity of acid which produces the first acid fluidity, and the proteid does not coagulate at any temperature, although it does not form acid albumen, precipitable on neutralisation, till it acts for some time, or until the liquid is raised to a certain temperature. That is to say, it does not coagulate on boiling, although it has not yet become acid albumen.

To return to alkali albumen. A saturated solution of caustic soda was now made, three parts of which were found nearly equivalent to one of hydrochloric acid, and another solution equal to the 1 in 10 dilute acid. With quantities ranging from 1 drop of the weak solution upwards, it was found that both ovalbumen and serum albumen passed into alkali albumen, precipitable on neutralisation, in one minute, at 37° C. or any higher temperature. At 20° this did not take

place in the time specified. When the amount of alkali was increased to 10 drops of the strong solution in the case of ovalbumen, or 20 drops in the case of serum albumen, the neutralisation precipitate dissolved with difficulty in acid. This appeared to be due to the salt formed in neutralising the alkali, rendering the precipitate insoluble in acid. With less than this amount, however, the precipitate readily re-dissolved in acid, and the acid fluidity and the acid precipitate occupied the same relative positions as before. There is always some increase of coagulability by acids, so that the temperature of coagulation, with the same amount of acid as before, is less with alkali albumen than native albumen. With albuminous urine no neutralisation precipitate was ever obtained after the action of alkali; the effect was totally different. There was simply a considerable increase of coagulability by acids. This is represented in diagram VII, where the acid precipitate to the right is that obtained with hydrochloric acid at 50°. After the action of the alkali, the temperature falls, so that at a certain stage, represented by 1 on the alkali line, it will be 30°, by and bye at 2 it will fall to 20°, and at 3, or the extreme end of the line, it will fall nearly to zero, and less acid also will be required to produce the coagulation; the precipitate has moved, as it were, in the direction of the neutral point, but has failed to reach it. To produce this last result, however, a considerable amount of alkali is required; so much, in fact, that the salt formed in neutralising it contributes to the bringing about of coagulation with smaller quantities of acid than before. It is evident that, if the combination of alkali with the albumen of albuminous urine is to be regarded as an alkali-albuminate, it is of a different kind from that produced with ovalbumen or serum albumen.

While ovalbumen is more coagulable by acids than serum albumen it is also, as far as I could ascertain, more coagulable by salt. It is, in short, more readily coagulated in every way. Acid albumen formed from ovalbumen required one drachm (3·55 c. c.) of saturated saline solution at 10° C. to precipitate it, while the same quantity prepared from serum albumen was found to require 3 drachms or more at the same temperature.

It is interesting to observe that, in some respects, the difference between the albumen we find in urine and native serum albumen is one of degree only, like that which obtains between the latter and ovalbumen. Just as serum albumen

is less coagulable than ovalbumen, so the proteid of albuminous urine is still less coagulable than the former. But the effects of dilute acids and alkalies seem to point to a more radical difference. Now the albumen which occurs in urine is said to be either serum albumen or globulin, but most frequently the former. If so, it is evident, if my observations are well founded, that it has been altered in some way or other, and the question arises—are its reactions not so widely different from other proteid bodies as to entitle us to regard it as a proteid *sui generis* to which we might appropriately give the name of *ren*-albumen? For what can be the origin of this modification of albumen? It is obvious that it must be referred either to the blood or to the kidneys. If such a body exists in the blood, it has certainly never been isolated, for it differs still more from globulin than from serum albumen. Indeed, it could easily be shown that ovalbumen is more closely allied to globulin than is serum albumen, and the latter more than ren-albumen. These proteids form a scale, so to speak, each member of which from ren-albumen to ovalbumen approaches more nearly the characters of globulin. If it is only through the kidneys, therefore, that we become acquainted with ren-albumen (if I may so call it), is its origin not rather to be regarded as due to some action on the part of the renal cells? Such a view would, in my opinion, render the causation of albuminuria much more easily understood than otherwise, and would quite coincide with views which have already suggested themselves to eminent authorities. Let me quote the following from Niemeyer.* "The presence of albuminuria, which usually persists throughout the whole course of the disease" (speaking of chronic Bright's disease), "and only disappears now and then for short periods, unfortunately cannot be satisfactorily accounted for. One might be led into mistaking the albumen and the exudation cylinders for the products of inflammation, excreted from the free surface of the tubules, were it not that in other and noninflammatory diseases of the kidney the urine contains both tube casts and large amounts of albumen. I believe (he continues, and he prints this sentence in the German in larger type) the presence of albumen in the urine to depend upon the destruction or degeneration of the epithelium. That normal urine should not contain albumen is, confessedly, extremely perplexing to physiologists. They are almost

* Translation of 8th German Edition by Dr. Humphrys and Dr. Hackley, Vol. II, page 27 ; or 6th German Edition, Vol. II, page 22.

forced to suppose that the albumen does transude into the kidney, together with the water and salts; and they are reduced to the hypothesis that its absence from normal urine is in some way connected with the epithelial lining of the uriniferous tubules, the transuded albumen either becoming assimilated for the nutrition of the epithelium, or else its diffusion into the tubules, receiving some other modification, as yet unknown to us, from the epithelium. The observation that albuminuria exists in all diseases of the kidney, in which its epithelium is either degenerated or destroyed, fully confirms this physiological hypothesis."

A similar opinion, I believe, is held by Dr. George Johnson and others. If this be so, we can readily understand why the albumen we find in the urine should be different from serum albumen. For it is in the highest degree probable that this action of the renal cells, although not sufficient to change all the transuded albumen into other products as in health, will still be exercised in Bright's disease to a certain extent, and so may give rise to this modified albumen. At the same time, if the distinction whch I have attempted to establish between ren-albumen and other proteids bear the test of further investigation at the hands of others, it would seem to corroborate the physiological hypothesis of Niemeyer and others. Neither does such a view exclude the influence of diseases of the blood or morbid constitutional states in producing albuminuria. We can quite understand, too, that albumen might appear in the urine, in consequence of increased transudation, as when not only albumen but blood and blood corpuscles transude through the capillaries, in consequence of excessive venous obstruction. Such an occurrence does not disprove this view of the action of the renal cells, for it is evident that, although the renal cells may be unimpaired, their functions may be so far interfered with by such vascular disturbance that they cannot transform the albumen completely into other products, as in health.

Some other features of difference between ren-albumen and serum albumen, as well as some points in which albuminous urines differ from each other, I have also had under observation, but I cannot enter into these on the present occasion.

ON THE QUALIFICATIONS AND DUTIES OF A
HOSPITAL NURSE.

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As the Medical section of the Lectures * has been taken last
this session, it rests with me now to address to you a few
words appropriate to the conclusion of the course.   You have
had the principles on which you are to act set before you by
us; you are now to put them into practice for yourselves.
And looking back on all that has been said, the first thought
likely to occur to you, one that would certainly occur to an
independent and more experienced onlooker, is this, is it really
necessary for us to know all that has been brought under our
notice during the present course.   It is a question often and
very reasonably put by medical men—Should a single symp-
tom of any ailment be explained to a nurse, or should she be
taught the treatment, or at least the reason of the treatment,
of any disease?   Now, even if it could be rigidly determined
what is in itself essential for you to know, and what is not
absolutely essential, there can be no doubt that the former
would lose something of its completeness, something of its force,
if the latter were taken away.   But we can draw no well ruled
line between the two; they are too completely interwoven.
A good nurse will do her work all the more thoroughly that
she does it intelligently, and a wise nurse will avoid the only
danger that is to be feared, the danger of a little knowledge—
of knowledge a little beyond what is absolutely required for
her usual and more ordinary duties.   To this danger I shall
by and bye refer.   But to you as nurses asking yourselves the
question, Is it really necessary to know and remember all that
we have heard? and to all who think that you are taught
overmuch, a sufficient answer to my mind is this, that you can
never tell when you may require to act on your own respon-
sibility, you can never foresee the possible emergencies that
may at any time confront you.   Several of our best known
nurses have had their knowledge and skill put to the test
amid the countless exigencies of actual warfare, and if, as we
all hope, this may never be your experience, there are in a
city like ours the no less real and the far more constant forms
of disaster that meet us on every side, whether in the struggle
for existence or in the conflict with disease and death.

* The Winter course of Lectures on Medical and Surgical Nursing to the
Nurse Probationers of the Glasgow Royal Infirmary, 1880-81.

Assuming, then, that these lectures bring to a close your period of probation, and that you are now about to engage in the work of nursing as a profession, I cannot do better than refer to those natural gifts which are most essential to you in your future career.   These qualifications deserve and admit of a more definite arrangement than is generally given them ; at least there is one that should always be placed first as the most essential and the foundation of all, that is, a love for the work, a devotion to it for its own sake.   That must underlie, as it will embody, all the others.   Exceptions do occur when the work is undertaken primarily as the means of gaining a livelihood and the love for it steadily grows, but these do not affect what I believe to be the rule.   Certain it is that if your love for the work comes tardily, so will your success, and this will never come if that is altogether wanting.

I would like to put plainly before you what you are to understand by devotion to your work, or rather what you are not to understand by that expression, that you may guard against what I believe to be a mistaken view of it.   I avoid what may be termed the sacred aspects of the duty, I leave these untouched when I say, don't be devoted to nursing in the abstract, don't be devoted to the *idea* of it you have formed or that others may have formed for you, but work for your patients, work for them as individuals, be devoted to the well-being of each.   In so doing you will not limit the most exalted view of your calling that one can possibly take.   It is only when understood in this sense that devotion to your work implies what is in itself another qualification of a nurse—a kind and loving heart.   Many occupations can be carried on independently of such a gift, but not that of a nurse.   That will shorten the weary hours of watching, lighten duties in themselves unpleasant, and make you bear with patience the fickle temper, or it may be, the ungrateful heart.   Expressing itself on your countenance it will be reflected on and caught up by those about you.   It will quicken your ear to the cry of want or pain, it will lighten your footstep and soften your touch.

This word, touch, brings us to the next essential qualification I would mention, namely, tact, one by no means peculiarly essential, but still most essential to you in the work before you.   Tact is a quality not easily defined ; but if we go back to its original meaning we can construct a definition upon it. It means literally touch—the touch of skill and experience. But it has a wider significance ; it includes the mental touch, something more complete than the other ; not a touch merely, but a grasp—the grasp of the situation.   The comprehension

of a difficulty, the grasping of it on all sides so that it disappears in your hands. This is tact, and by it alone will you be able to meet the ever recurring and ever varying emergencies that beset your work. Patience, another important qualification, is indeed a virtue in a nurse. It will doubtless be the result of that devotion to your work to which I have referred; but often it will be sorely tried, even if you possess it as a special gift. In convalescence particularly, when the patient feels his weakness and is more alive to the dull monotony of day succeeding day, is this most likely to be the case. When your ingenuity well nigh fails you in providing some new entertainment for him, then comes the test of your patience. There are many other natural gifts of great value to a nurse. They are not peculiar to her office however, and are in general demand. Discretion, the recognition of the right course amongst several others. Decision in meeting a difficulty and firmness in overcoming it. Gifts such as these, combined with gentleness and a good temper, form an ideal which you must ever keep before you, and to which you must ever strive to attain.

From these natural gifts, which, though natural, undoubtedly admit of further cultivation, we pass on to what may more accurately be termed habits. They are more under the power of the will, and if you possess them to a slight extent they may be strengthened or matured by determined effort. First of all I would mention order. That is simply having a place for everything, and everything in its place. There is no habit of more extended advantage to you than this. It is a great part of neatness, and like it, looks well; but what is of far greater importance, it enables you to act well. It may prevent many a serious error, or, it may be, dangerous delay. It will help you in any form of emergency, not merely with "an emergency case" as we say, but in a case of general emergency. Suppose, for example, that some evening the supply of gas to the hospital was suddenly cut off, order of a conspicuous kind would enable you to find everything in the dark. Without it you may find yourself in the dark even at noon-day. Its cultivation generally will be the most wholesome discipline to yourself, and pave the way to other habits to which it directly tends. Punctuality is such another habit. It is just order with reference to time. I referred to its importance in speaking of the administration of food, and do so again in illustration of the general principle. When we speak of a particular habit, we refer usually to an intellectual or moral quality, but we can apply the term also to what is purely physical. The habit

of early rising, for example, will depend on the conviction of the advantage or necessity of the practice, but the individual will also find that he will awaken and rise most readily at that particular time each morning; a physical as well as a mental habit has been formed. And so we incline to fall asleep at a particular hour. This applies equally to the taking of food, or rather to what prompts to it, the sensation of hunger. We have then in health a natural physical punctuality; but in disease it is quite different. The appetite is capricious, and feeble at the best. Surely we should throw no obstacle in the way to its return to the natural state. Further, you may find that if you neglect this, and delay the giving of a meal when it is ready, the patient's appetite is gone, and that means strength gone and time lost. Then, if the body is weak the mind is weakened too. The patient will be far more exacting on your attention, he will fret over your delay, and magnify a few minutes into many. Profit then by the cultivation of this habit enforced on you here. Essential to the well-being of the whole hospital, regard it as an invaluable training to yourself. It will enable you to contend against the very opposite condition of things that you will meet with in private nursing. For there this special order and regularity are not required as a rule, but only as the exception in the hour of sickness. In some families these habits are conspicuous by their absence in any degree. Such a condition of things you can only meet quietly, yet firmly and effectually, by meeting it naturally; and it is here, in this hospital, as I have said, you must endeavour, by cultivation, to make these habits a second nature of yourself.

Cleanliness and neatness are two of the recognised, I might say statutory, qualifications of a nurse. Their importance is too apparent to require any remarks from me. But as regards your wards, and all that pertains to them, let me just say this, remember you must be as particular—especially in the matter of cleanliness—about those things that usually escape the observer's eye as those that conspicuously meet it. Whether it is desirable that ward cupboards and presses should have glass doors or not, it is absolutely essential that everything that is in them should be kept as if they had. Honesty, truthfulness, and sobriety, I only mention to complete the recognised list. They need only be mentioned.

All these natural gifts or habits to which I have referred, you may practise here in hospital without modification or restriction. You possibly hope by and bye to be engaged in private nursing, when you will be brought into contact with

those accustomed to be waited on, and who have more regard than your patients here to the manner in which it is done. Now, even that training you can get here, for there is not one manner for the rich and one for the poor. If there is the same law for rich and poor, still more is there the same duty for you to perform in the same spirit towards both. Cultivate then from the outset that deportment which will command affection and respect, and you will fit yourself for your work in any household.

There are still some cautions I must give you; some habits to be avoided. Guard against anything like favouritism; you must be impartial in the discharge of your duty. The thankless patient must be cared for as well as the most grateful. Your duty will be a greater pleasure in the one case, no doubt, but even if not pleasant, it is equally your duty. Never speak about a patient's case in his hearing, or should that be unavoidable, do not do so in a whisper; and never let a patient overhear or learn in any way from yourself what the doctor has not yet thought it right to tell him. But there is one habit particularly I would have you train yourselves from the very first to avoid, and that is gossiping about your patient's ailments to those whom we may call "outsiders." I have nothing to do with whether you are gossips in the ordinary sense of the term; I speak only of what it is my province to speak of. Make it a special study to separate what concerns your patients from everything else. Large though your budget of news may be, so large that, without being generous, you feel constrained to share its weight with others, keep distinct what concerns your patient; put it away in a separate part of your head, and keep it there till the doctor comes.

I have discussed sufficiently your general qualifications, and have considered them chiefly in relation to those under your care. I would like now to say a few words to you about your relation to the doctor. This question, you will understand, is of the very first importance. More important than your relation to the patient? I did not say so. That would be to compare things that are, in respect of their value, incomparable. Consider what kind of union there is between you and us. To do battle with a common and relentless foe, an enemy that in one or other form will prove some day victorious. No duty can command more unity of action, and, from its character should create a spirit less dependant on, less tolerant of rule and form. At once a battle and a ministry of the tenderest kind, you imperil its very existence by any form of artificial combination, especially if it be one

amongst yourselves distinct from us. I do not speak of rules and laws framed for administrative purposes in hospitals. However clamant the question be, just now, it is one which does not concern you and me for the present. I speak only of the relation between doctor and nurse as individuals. Recognising the importance and the nobility of the duties which you share with us, you will unhesitatingly accord to the doctor that obedience and respect which are his due. The latter ought to be reciprocal; the former, I need hardly say never, and must always be implicit on your part. And it is here that the danger of a little knowledge is recognised. The lessons you have learned and the knowledge you have gained have increased your power of action, and you may be tempted to exercise the influence it has given you. Trained under one doctor some one of you may forget yourself so far as to criticise adversely the practice of another, and, it may be, act on that opinion. If so, you will never make a greater mistake; one more detrimental to yourself and to the vocation you have elected to follow. But if there is one thing of which I shall venture to speak positively it is this, that this is not a mistake to which the trained nurse is liable. It is notoriously the nurse of no training, who has picked up a scrap of information here and there, often by stealth, as it were, lest she should expose her ignorance; it is she who, because of her ignorance, and in a vain attempt to conceal it, is tempted to arrogate to herself opinions and functions which she is utterly unqualified to form and fulfil. I say this in defence of the present system of training nurses, so far as I am acquainted with it. But I would earnestly warn you against anything like a vain display of your qualifications. There are still many among the general public who think that the trained nurse must be more difficult to deal with. It must be admitted that the very fact of your being trained raises in many minds a feeling of apprehension. However they may express the feeling they entertain, it will resolve itself into this—you are trained, specially trained, so much the more are you unlike ourselves, and you are to be one of ourselves for a time. This is no extreme view. I am not speaking of cases where it is assumed that because you are trained therefore you are self-conceited, that you will "put on airs," as it is often termed. Yet, if we recognise the fact of such an extreme opinion as this being sometimes held, we are led to the remedy for all degrees of it. And what is that? You are not going to give up your special training. No. Neither must you give up your old self. You must preserve your individuality, you must shun all man-

nerisms, you must more than ever *be natural.* Those of you who learn best will least need this advice, but you all require to remember the very general opinion to which I have referred (general, I mean, in the less extreme and not unnatural form which I stated first), and to keep before you the proper, the only remedy.·

But I must revert, before concluding, to another point bearing upon the relation between doctor, nurse, and patient. I spoke to you at the beginning of the course about the importance of cultivating the habit of observation, to what a wonderful extent it could be cultivated, and how wide, how unbounded indeed, its field. Just because you cannot be expected to estimate correctly the comparative value of the different symptoms, you should endeavour to take note of all. Let none escape you, or if that be too much to expect, let as few as possible be overlooked, and don't allow yourself to be the judge of what is of little moment, and what is of importance. But not only must you observe, and observe accurately, but you must be accurate in carrying out your instructions, or note exactly to what extent or in what respect you are unable to do so. If you observe accurately, and act accurately, you will report accurately—there can be no doubt of that, but if you fail in the first two, never hesitate, never be afraid to report accurately wherein you have failed. It is the last point I have to mention; it is of the very first importance. If you fail in that you fail in all.

But you will not fail. Only do your duty to yourselves, and you will do your duty to all, and to the hospital which is, for a time, to be your home. May you so live and so learn within its walls as to maintain its reputation, and make it an ever increasing means of good.

ON A CASE OF ENTERIC FEVER, IN WHICH QUININE WAS EMPLOYED AS AN ANTIPYRETIC.

Under the care of JAMES W. ALLAN, M.B.,
Superintendent and Physician City of Glasgow Fever Hospital, Belvedere.

(Read before the Medico-Chirurgical Society of Glasgow, January 14, 1881.)

The following brief account of patient's condition previous to his admission to Belvedere is simply condensed from his own very interesting written narrative, which I should be tempted to lay before the Society but for its length :—

Briefly then—Patient suspected irregularity of diet to have been the primary cause of his illness.   In July, 1877, patient, who was a commercial traveller, was obliged to undertake extra work, and began to suffer from what he considered to be "the symptoms of a severe cold."   There was "stupifying headache," with "severe attacks of bile and frequent vomiting," desire for sleep and loss of appetite.   He then got into a state of "stupor"—"going about his duties in a mechanical way, half weary of life," with no confidence in himself in business transactions, and feeling so indifferent that he seldom asked for an order.   The headaches increased in severity, and there was a "burning, greasy sensation" in his stomach, and "more frequent vomiting."   He "alternately felt quite chilly and uncomfortably warm."

About the twelfth evening after noticing the first symptoms, he determined to induce perspiration, and he succeeded in doing so by the internal use of whisky toddy, and the external application of hot water bottles thrust into socks which had been rinsed out of hot water.   The result was profuse perspiration.

About 11 P.M. he got up to dry away the perspiration and get his bed changed.   This is *about* the last thing he remembers till he became conscious in the Belvedere Hospital some weeks after.

Such is, as nearly as may be, the patient's statement in his own words.

The following is the clinical history of the case, as recorded in my notes in the Journal of Ward XVI :—

James C., æt. 26, admitted 8th August, 1877 (thirteenth or fourteenth day of illness).

Rose spots.   Tongue coated.   Temperature 104·3°.   Pulse 102.   This is doubtless a case of enteric, yet patient's confusion and look rather suggest typhus.

Sponge.   Milk diet.   And shave head.   ℥vi wine.

9th August.—Tongue brown and crusty in centre.   Had loose yellow motion yesterday, and one this morning.   Pulse 96 this morning.   Temperature 102·6°.   Called by nurse in afternoon to see patient.   Found him suffering from rigors. I fear hæmorrhage.   Nurse says that he had shaking like this at 11 this forenoon.   He objected to nurse sponging him. Give gtt x of turpentine in a wineglassful of milk.

10th August.—This man had severe shiverings last night and this morning.   He got those 10 drop doses of turpentine at intervals of four hours.   Had two yellow motions.   Rested badly.   Temperature this morning 103·6°.   Pulse 120.   To

have brandy (ʒiv) instead of wine. To be well sponged with vinegar and warm water.

18th August.—Good night. Slept very well. No motion. Temperature last night 100·2°; this morning 101·8°. Cheeks flushed. Nurse Harrigan is satisfied that the brandy (he is getting ʒiv) flushes his face.

[Here, unfortunately, there is a break in the record.]

29th August.—Evening. Patient seems to have relapsed. Temperature last night 103°; this morning 101·2° (?); this evening 104·4. To have grs. x doses of quinine. ℞.—Quinine sulph. grs. x, mitte tales vi. Sig.—One every two hours till temperature is reduced. Temperature to be taken every hour.

30th August.—Nurse Harrigan reports:—Got powder at 10 P.M. last night, his temperature being 104°. At 11 P.M. it was 103·4°. He got another powder at 12 P.M.; temperature was taken then and proved to be 102·6°. At 1 A.M. his temperature was 103°. Got a powder at 2 o'clock, his temperature then was 102°. At 3 o'clock his temperature was 100·8°. Got another powder at 4 o'clock, his temperature then was 100·2°. At 5 A.M. temperature 100·2°. At 6 A.M. got another powder; temperature at this time 98·4°. Got no more powders as patient said he had an inclination to vomit. Temperature taken at 7 A.M. was 99·8°. Nurse Spence took his temperature again at 8 A.M.; it was 99·1°.

Nurse Harrigan says that he perspired heavily about 1 A.M. It is to be noted that when Nurse Spence took his temperature last night at 7·30 it was 104·4°, and when Nurse Harrigan took it at 10 P.M. it was 104°, thus showing a fall before any quinine was administered. Patient says he is a little deaf—says he feels sort of queer. This is, of course, due to the quinine.

31st August.—Got no quinine since 6 A.M. yesterday morning. Temperature last night about 20 minutes to eight was 100·8°; at 12 midnight it was 100·8°; this morning, 100·2°.

It will thus be seen that the temperature is keeping down. Is this due to the quinine taken? Has the effect lasted so long?

1st September.—Still getting no quinine. His temperature last night at 8 P.M. was 103·6°; at midnight, 102·6°; and this morning, 102·8°.

It will thus be seen that the temperatures are higher. (Compare with yesterday's note.)

2nd September.—Still getting no quinine. Temperature about half-past seven last night was 103·6°. This morning it

was 102·8°. Slept well last night after being sponged. Was grinding his teeth and talking through his sleep.

To have a scruple of quinine at 1 P.M. to-day. ℞.—One scruple of quinine (in powder). Sig.—Take the powder at 1 P.M. Temperature to be taken immediately before the administration of the quinine, and every hour after it till evening visit.

2nd September, Evening.—Owing to mistake patient did not get the ℈ i dose of quinine mentioned in the morning note. He will get it at 10 P.M., and the temperature will be noted before its administration, and every two hours thereafter till morning visit.

3rd September.—Got the powder at 10 P.M. last night. Temperature before it was given was 103·6°; at 12 o'clock midnight it was 103·8°; at 2 o'clock, 103·8°; at 4 o'clock, 103·6°; at 6 o'clock, 102·6°; at 8 o'clock, 102·6°.

He slept pretty well. No motion. Ground his teeth. To use the bed pan.

4th September.—He got no more quinine. Temperature at 12 o'clock midnight last night was 104·2°; this morning, 104°.

Pulse this morning, 99. ℞.—Quininæ sulph. Grs. xxx. Sig.—To be taken at 6 P.M. *as one dose.* Temperature to be taken every two hours after till 2 A.M.

5th September.—Nurse Harrigan reports—Got the quinine at 6 o'clock yesterday evening. His temperature at that hour was 103·2°; at 8 o'clock it was 104·6°; at 10 o'clock, 104°; at 12 o'clock, 103·2°.

Slept till 3 A.M., when nurse again took his temperature, it was 103°; at 5 A.M. it was 101·6°; at 7 it was 100·8°.

Nurse Spence took it at about half-past eight this morning, and found it to be 101·2°. Rested pretty well last night, but from time to time he was delirious. Had one motion during the night—it was loose and yellow. Sweated heavily all night. The result of the administration of the large doses of quinine noted has not been such, I think, as to justify me in persevering in that line of treatment. I shall, therefore, abandon it. Patient says he is a little deaf, especially in the left ear. Pulse 94. Tongue moist and coated with light-coloured fur.

I must confess that patient's condition to-day, taken altogether, must be pronounced favourable. It is worthy of note that patient has been getting no stimulant for some time. It is noted on the clinical card, under date 20th August, "getting no brandy now." He has got none since then, nor any other stimulant.

6th September.—Nurse Spence reports:—Got the chloral draught (ʒij of the syrup) at 12 o'clock last night. He slept till 4 A.M. He was put on ʒvi wine yesterday. No motion during the night. Temperature last night was 104·2°; this morning, 103·6°.

He is getting no quinine. Artery on each temple somewhat distended and pulsating visibly. (Last night patient's mind seemed occupied by the idea of wealth. Spoke of giving sums to the nurses). Renew draught, to have it at hand if required. Continue wine.

7th September.—Had a good night. Speaking through his sleep, but sensible when awake. No motion during night, but a slight one this morning, loose and yellow. Yesterday afternoon had copious motion, partly loose and yellow, partly formed. Temperature last night, 104·4°; this morning, 103·6°.

Nurse Harrigan says:—That when she came in this morning (she is on day duty), patient complained of being cold. Extra blankets were applied. Both nurses state that patient has on previous occasions complained of cold. Nurse Spence says that on one of these occasions she felt his skin and it was hot.

9th September.—Last night patient was put on ʒviij of brandy. He got a tablespoonful every hour from 10 P.M. to 1 A.M. Then he got the draught, and slept after it till five this morning. He was delirious and getting out of bed before he got the draught. The brandy alone did not seem to have the effect of quieting or soothing him—on the contrary, he was delirious while getting it—nurse thought it made him worse. After 1 A.M. he got a tablespoonful every two hours. *Continue to give brandy in this way—put it in milk, and give two tablespoonfuls at a time.*

Bowels were very freely moved this morning, the motion was loose and had a dreadful smell. Temperature last night, 104·2°; this morning, 102·4°.

Treatment at present to be simply administration of brandy in milk, and the procuring of sleep by draught.

10th September.—Had a good night. Slept all night nearly. Had to be wakened for his brandy. He did not get the draught. No motion. Temperature last night, 104·2°; this morning, 102·8°.

12th September.—Patient had a good night—slept well—no motion. Temperature last night was 101·6°, and this morning 99·6°. This fall in temperature must have occurred spontaneously—*i. e.*, independent of any medicinal agency—for he has not been getting quinine nor hot packs nor other antipyretic remedies. Patient lies quiet, and apparently free from suffer-

ing. During my visit he 'seemed to have a notion, so far as we could make out, that Mr. Gladstone was over at the other side of the ward. His speech is indistinct, probably owing to state of tongue—not improbably in part also to impairment of nervous apparatus. He is taking his milk and brandy.

13th September.—Slept very well—no motion—trouble in getting him to drink sufficiently—he did not want to be bothered. Temperature last night 99·8°; temperature this morning 100·8°.

15th September.—Slept very well and drank well. Had a loose yellow motion passed in bed. Temperature last night 101·4°; temperature this morning 98·4°. Profuse perspiration of head and face. Nurse says it has lasted from half-past seven o'clock this morning. Patient's treatment of late has consisted entirely in the administration of brandy and milk.

16th September.—Had a good night—slept well. Had no motion—took his drink well. Temperature last night was 98·2°; temperature this morning 100·2°. Tongue moistening.

17th September.—Slept well. No motion. (*Give enema to-day*). Temperature last night 98·2°; temperature this morning 99·4°. Ground his teeth a good deal last night.

18th September.—Patient had a good night. Slept soundly all night. No motion. (Had one yesterday after the enema). Ground his teeth. Temperature last night was 98·2°; this morning 99°. Patient at present lies quiet, and free from pain. Suffering only from hunger and weakness.

20th September.—Says nothing is troubling him but the hunger. Temperature last night was 100°; this morning 97·6°.

26th September.—Patient's temperature has been all that could be desired of late.

From the 21st to 29th September inclusive, the morning temperatures ranged from 97·4° to 98·6°, and the evening temperatures from 98·2° to 99·2.

Temperature.—Sept. 30.   Morning, 98·8°.   Evening, 102·2°.
   Oct. 1st.   „   99·2°.   „   103·2°.
   „ 2nd.   „   99°.   „   102·6°.
   „ 3rd.   „   99·6°.   „   101·2°.

Patient says he is always hungry.

4th October.—Patient has been getting ʒviij whisky instead of brandy for two days. Temperature has been up again. Morning 101·6°; evening 102·8°.

5th October.—Did not sleep well, being disturbed by a fellow-patient. Got an enema this morning, which was

followed by a costive dark motion. Tongue moist and some-
what furred. Patient says he has a little pain in his head.
Temperature—morning 102·8°; evening 104·2°.

Treatment at present.—Getting milk, beef tea, ʒviij whisky,
and two eggs. Give acid mixture.

6th October.—Slept pretty well. No motion. Drinking very
well. Getting brandy again (began yesterday) instead of
whisky.

12th October.—Slept pretty well last night, but talked
through his sleep. Got an enema day before yesterday, which
acted. No motion since. Bowels never move except by
enema. He is getting milk and brandy and eggs and beef
tea and acid mixture.

Date.	Temperature.	
	Morning.	Evening.
October 6.	104°.	104·4°.
,, 7.	104°.	105°.
,, 8.	104°.	105°.
,, 9.	102·8°.	104·2°.
,, 10.	102·4°.	104·2°.
,, 11.	101·8°.	102·8°.
,, 12.	99·4°.	102·4°.
,, 13.	98·6°.	100·8°.
,, 14.	97·4°.	99°. Formed motion last night.
,, 15.	96·6°.	98°. 2 loose yellow motions.
,, 16.	97°.	98·4°.
,, 17.	96·2°.	98°.
,, 18.	96°.	

18th October.—Stop brandy entirely.

23rd October.—Patient is doing nicely. Seems fairly con-
valescent this time. He is getting only bread, milk, beef tea,
tea and arrowroot, and eggs.

Date.	Temperature—*Continued.*	
	Morning.	Evening.
October 18.	96°.	97°.
,, 19.	97°.	97·2°.
,, 20.	97°.	97·8°.
,, 21.	98°.	97·8°.
,, 22.	97·6°.	97°.
,, 23.	97°.	

To have chicken soup in addition to present diet.

25th October.—Got up for an hour to-day.

30th October.—Patient did not sleep very well. Ground his
teeth—woke up from time to time, moaning and tossing about.
Had a loose motion—no enema. Patient went to bed yester-
day after being up for less than three hours. Nurse Spence

thinks that yesterday and on Sunday he was not so well. It should be mentioned that patient has suffered greatly from piles. His temperature last night was 100·4° ; * this morning 98·6°.

The following are his morning and evening temperatures since 23rd October :—

Date.	Morning.	Evening.
October 23.	97°.	97·4°.
„ 24.	98·4°.	98·2°.
„ 25.	97·8°.	97·8°.
„ 26.	98°.	98·4°.
„ 27.	97·8°.	98·8°.
„ 28.	98·8°.	99°.
„ 29.	98·2°.	100·4°.
„ 30.	98·6°.	98·4°.

Patient will remain in bed to-day. To have only milk diet and a little beef tea. No solid food whatever.

31st October.—Temperature last night 98·4° ; this morning 98·6°. Slept well, but ground his teeth—not so restless. *To get up for an hour to-day. To have bread, milk, beef tea, and arrowroot.*

2nd November.—Temperature last night 99·2° ; this morning 98·4°. Dismissed well 5th December, 1877.

The following interesting extract from patient's written narrative refers, I think, to about the end of October, and the end of his illness as well. He says :—

"I got up regularly for five days, remaining up one hour the first day, and two hours for the following three days. If I rightly remember, I was allowed three hours on the fifth day, and I became very languid before my time was up. When I got to bed I felt very warm and uncomfortable, and chagrined at myself for not going to bed sooner. A friend was allowed to come in and see me that evening. When my temperature was taken it was considerably above 100°. I cannot, however, attribute this change in my temperature to excitement occasioned by my friend's visit, but rather to my over-taxing my strength in my remaining up too long that day. I then became subject to occasional heats. They always began about the region of the heart, and spread over my whole body with a peculiar sensation perhaps better described by my saying it was like as if I blushed all over, and this blush intensified itself into a glow which gave place to profuse perspiration, at the same time relieving and weakening me,

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* 100·8° is marked on sheet, but Nurse Spence is satisfied that 100·4° is the correct temperature.

and this sensation continues even till now (May, 1878). If I indulge in a smart walk, the familiar blush comes on, though very slightly."

This man's nervous system seems to have been profoundly affected by the disease; for we find that, before admission to hospital, he "alternately felt quite chilly and uncomfortably warm." After admission we find him (on 9th August) "suffering from rigors;" while on 10th August it is noticed "this man had severe shiverings last night and this morning." And we find him, months after leaving the hospital, subject to the "familiar blush." This unstable condition of the nervous system was not remedied apparently by the quinine treatment. *Query.*—Was it aggravated and prolonged thereby?

Remarks.—The two relapses are interesting. The first was vigorously attacked with quinine, but the result, as regards benefit to the patient, cannot be pronounced satisfactory. It seemed to have a sixteen to nineteen days' run. No doubt the repeated 10 grain doses did depress the temperature, and the depression even persisted in a marked manner.* But was the patient benefited by this? As to the large single doses, it was surprising to me that they did not cause a rapid fall. (After a large dose patient's condition is stated as "favourable.")

It was resolved to abandon the use of the quinine on 5th September; and on the 12th of that month a spontaneous fall of temperature is recorded.

The second relapse ran a fortnight's course. These relapses seem to me clearly specific, running their appointed course independently of treatment. There was an interval of say sixteen days between relapses.

I do not think I should now push quinine as I did in this case. My patient recovered, and, excepting for the deafness, the queer feeling, and irritability of stomach, as shown by an inclination to vomit, there does not seem any evidence that he was injured by the drug; but my personal experience of a big dose of quinine has left such an impression on my mind that I shall not be likely to prescribe such for my patients in future, unless I have a very good reason for doing so.

But, admitting that the patient was not damaged by the treatment, the important point is that there does not seem to me any clear evidence that he was benefited by the use of the drug.

With regard to the danger arising from high temperature in

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* This is also well seen in a case of mine published in the *Glasgow Medical Journal* for June, 1880.

enteric fever, my limited experience leads me to believe that there are not very many cases in which death can, with any degree of reason, be attributed to hyperpyrexia *alone*. It is not denied that cases do occur in which reduction of temperature is an important indication, and in such cases the trial of large doses of quinine, or other antipyretic drug, should not be neglected. (I do not speak of the cold bath, not having experience of its employment.) *As a general rule heroic antipyretic treatment seems quite uncalled for in enteric fever.*

No doubt severe cases and high temperatures are generally associated; but I am not convinced that the hyperpyrexia is necessarily *the* source of danger to the patient. If the temperature goes decidedly high—say 105° or 106° Fahr.—then this may, of itself, put the sick person in jeopardy. But I cannot convince myself that a temperature of say 103° F., or even 104° F., is, *in itself*, likely to endanger the patient's life; and I cannot see that we are particularly called upon to make special efforts for its reduction.

I regard high temperature as an *indication* of danger rather than as a *source* of danger in itself; and it is possible that we may reduce the temperature without actually benefiting our patient—without really bettering his condition or improving his chances of life.

High temperature is like a danger signal. We may remove the signal, but the danger remains.

We don't alter the time of day by turning back the handles of the clock. So I think we may succeed in reducing a high temperature without altering that condition of things of which the high temperature is only the indication.

CASES OF CONGENITAL MALFORMATION OF THE AORTIC VALVE, WITH REMARKS ON THE INFLUENCE OF SUCH LESIONS IN PRODUCING DISEASE IN AFTER LIFE.

BY JOSEPH COATS, M.D.

THE specimens which I have to show may, I think, be conveniently divided into two sets, representing two different forms of congenital disease of the aortic valve.

In the first two specimens we have the aortic valve presenting an approach to the appearance of a cuspid valve, the musculi papillares and chordæ tendineæ being here abnormally represented. The third case is inserted here as being probably of a similar kind, but the alteration of the curtains from endocarditis is such that no dogmatic conclusion can be drawn. The description of the specimens forming this first set is as follows:—

CASE I. CONGENITAL MALFORMATION OF AORTIC VALVE—REMARKABLE FENESTRATION AND FORMATION OF TENDINOUS BANDS.—For this specimen I am indebted to my friend Dr. Yellowlees. It is not unusual to meet with a certain amount of fenestration of the marginal parts of the aortic curtains; and this is quite consistent with sufficiency of the valve, because the place of contact of the curtains is slightly removed from the margin so that during closure there is a certain piece of free margin floating loose in the blood in the aorta. The line of contact can generally be detected a short distance from the margin by the fact of its being slightly thickened. But in this case the whole of the curtains are unusually deep and the line of contact is removed from the edge much farther than usual. The free margin is fenestrated to an extraordinary extent, so much so that isolated tendinous bands are formed, some of which pass from the middle of a segment directly to the aortic wall, having a free course of three quarters of an inch. The upper limit of the insertion of the edges of the curtains including these tendinous bands is about an inch from the extreme lower limit of the pouch of the segment, and the edges are obviously inserted much higher up than usual. The resemblance in the appearance of the valve to that of the mitral or tricuspid readily suggests itself, and there is even in one case a projection from the aorta resembling one of the musculi papillares, into which the tendinous bands from the proximal edges of two curtains are inserted. The two curtains concerned are also partially united by their proximal edges. The pulmonary valve presents a similar condition although not so extreme. There is in addition a thrombosis of the tricuspid valve with which we have nothing to do at present. The case was that of a man said to be 54 but looking like 60. He had been in Gartnavel since 1854, and at no time presented any signs of heart disease. He died of pleuro-pneumonia.

CASE II. PARTIAL COALESCENCE OF AORTIC CURTAINS, WITH ELONGATED TENDINOUS BANDS. — This case resembles very markedly No. 1. We have here again the marked perforation of the margins and the formation of long tendinous

bands inserted high up in the aorta, the whole appearances suggesting an approach to the structure of the auriculo-ventricular valves.   Here there is more coalescence of the curtains than in No. 1, but even in that case there was considerable coalescence of two of the curtains.   Here also there is distinct though moderate thickening of the curtains from chronic endocarditis.   The formation of these long tendinous bands and the perforation of the margins must be regarded as undoubtedly congenital, while the coalescence of the curtains was probably acquired in after life as a result of chronic endocarditis of which the thickening is evidence.   The patient in this case died of erysipelas in a surgical ward, and nothing is known as to any symptoms during life.

CASE III.   GREAT CONTRACTION OF AORTIC CURTAINS FROM CHRONIC ENDOCARDITIS.   TENDINOUS BANDS PROCEEDING FROM THE ALTERED CURTAINS.—In this case the aortic valve is reduced to three crescentic projections at the orifice of the aorta, the result of chronic endocarditis.   What is noteworthy however is the fact that from the points of junction of these projections there pass upwards groups of small tendinous bands some of which are free and some partially attached to the aortic wall and each other.   These bands are much thicker than those in the first two cases, evidently from the chronic endocarditis.   For the proximate edges of each pair of semilunar segments these bands form a single group inserted by a common attachment in the aortic wall.   In this case there was, in addition, mitral disease with coalescence of the curtains and the usual funnel-shaped contraction.   It is very possible that in this case the whole disease may be acquired, but the existence of the tendinous bands is striking, and their very perfect formation suggests their origin at an early period of life, it being a recognised fact that pathological structures produced after birth are much less perfectly formed than those of the fœtus.

It may be asked whether such a condition of a sigmoid valve as that illustrated in Cases I and II is likely to predispose to disease in after life.   At the first glance the likelihood of this is not apparent.   The valve thus formed is just as competent as one of the usual structure, and in our first case the man had lived to the age of fifty-four without any secondary disease occurring in the valve.   This lesion therefore is not of itself sufficient to produce valvular disease.

There must be some reason however for the difference in plan of the two sets of valves in the heart, and it may be inferred that each is specially adapted for its own position,

and an approach on the part of one form to the structure of the other must place it at a disadvantage. The cuspid form of valve is adapted for covering an opening between two cavities, the sigmoid for stopping a cylindrical tube. An important difference in the two situations is that in the case of the aortic and pulmonary orifices there is less available space than in the case of the auriculo-ventricular orifices. The valves of these former orifices therefore are reduced to the smallest size possible, so that they may lie against the wall during the rush of blood at the systole of the heart. In order to admit of the segments lying fully back against the wall of the vessel they are perfectly separated from one another, whereas there is no such perfect separation in the cuspid form of valve. It is clear that any junction of two segments must mutually interfere with their falling back. An approach to the cuspid form implies more space, and when the tendinous bands, as in Nos. 1 and 2, from two segments of the valve pass together to a common insertion, especially if there is a partial coalescence of the proximal borders of the segments, then there must be a distinct interference with the passage of blood during the systole, which may be inconsiderable or not according to circumstances. As a rule the interference with the circulation will not be serious, but another element has to be considered. Such an imperfect retirement of the curtains will expose them much more to the mechanical impact of the blood during the systole, and if there is any tendency to inflammation in the valvular structures this is not unlikely to increase it.

This form of valvular disease then, as it shows an imperfect adaptation of the structures, may be regarded as to a limited extent predisposing to valvular disease in after life.

In the other form of congenital malformation exemplified in Case 4, and also possibly in Case 5, there is a congenital coalescence of the curtains. The cases are as follows :—

CASE IV. MALFORMATION OF AORTIC VALVE, TWO CURTAINS.—There is one very large curtain which is posterior and one of the normal size, which is anterior and left. The large curtain is a well formed semilunar curtain, but it shows indications of division in the form of a prominent band proceeding from the middle of the curtain to the aortic wall. The curtain is somewhat thickened and at its centre there is a calcareous deposition. The heart in this case was only moderately enlarged, weighing 12 oz., and there is no record of any valvular lesion having been observed during life. There is here a moderate

thickening due to chronic endocarditis, affecting, it is to be remarked, mainly the large curtain, but it can hardly be presumed that the entire coalescence is due to this disease. There is a congenital malformation due probably to disease in intrauterine life, causing an early coalescence of the curtains while in process of formation. It is noteworthy that this patient was the subject of advanced cystic degeneration of the kidneys, another disease which has probably its origin in an inflammation during fœtal life. He was a blacksmith and lived to the age of 43 years.

CASE V. CHRONIC DISEASE OF ALL THE FOUR VALVES— COALESCENCE OF CURTAINS, &C.—INDICATIONS OF CONGENITAL DISEASE OF AORTIC AND PULMONARY VALVE.—This case is of considerable importance in connection with our subject. There is here old valvular disease affecting all four of the valves, and also what seems to be evidence of congenital disease. In the aortic valve the three curtains have coalesced completely into a diaphragm which leaves a round aperture through which the blood could regurgitate freely. The only indication of division into three curtains is the existence of tendinous bands proceeding from three points in the diaphragm up on to the aortic wall. These form bundles but some of them are partially isolated. The curtains of the pulmonary valve are slightly thickened, and in two cases there is some coalescence of the proximal edges. Here also there is an appearance of tendinous bands passing up on to the wall of the pulmonary artery. In this case the extreme union of the aortic curtains into a diaphragm is very suggestive of congenital disease. It is not probable that a fusion occurring late in life would be so complete. Besides, we should probably in acquired disease have much more contraction of the curtains such as we had in No. 3. Again we have in the pulmonary valve a partial fusion with slight thickening. There is a very remarkable condition of the tricuspid valve. The whole curtains here are coalesced very much in the way the mitral frequently are. There is this difference however from ordinary mitral stenosis, that the coalesced curtains are much thinner, more natural looking than in mitral disease, and this too suggests an intra-uterine lesion, partially smoothed over as it were.

There may be some doubt of the congenital nature of No. V in which the curtains are converted into a diaphragm and the only indication of the normal division is the presence of tendinous bands proceeding from the arterial surface of the diaphragm at three points, but it may have been congenital. Peacock has described several cases in children, in which the

aortic or pulmonary valve was converted into a diaphragm with a central orifice. If it existed congenitally then of course of itself it must have formed a most serious lesion, producing both obstruction and insufficiency.

In No. IV the coalescence of the two curtains is so complete and the large segment which occupies their place is so well formed that it is difficult to suppose anything but a congenital origin. Peacock has described cases in which various degrees of defect in the number and form of the segments has occurred.

If this had occurred alone there might not have been strong grounds for supposing it to be of congenital origin. But, considering the rarity of valvular disease of the right side apart from congenital origin, and looking to the peculiar malformation of the tricuspid valve, there is a strong presumption in favour of the view that the disease is of congenital origin in all four valves.

A valve with two curtains may be quite competent. In the present case there was nothing known during life as to any cardiac lesion, and there could not have been any serious incompetency of the valve as the heart was only slightly enlarged. It is clear however that where there are only two curtains, a large and a small one, the large one is at a disadvantage, it is liable to be imperfectly supported by the other curtain during closure, and its middle part especially is likely to be doubled up. A gap will readily be left at the middle by the doubling up of the curtain. This mechanical interference may also predispose that part of the curtain to chronic endocarditis, and in the present case the thickening is much greater in the middle of the segment.

But there is another circumstance which predisposes such valves to disease in after life. Coalescence of valvular segments is common enough in extra-uterine life in consequence of chronic endocarditis, and it may be presumed that in the fœtus coalescence may be due to the same cause. In this early period, the defective valve is much more likely to adapt itself to circumstances than in later periods, and so it may come to perform its function almost perfectly. But a structure which has been inflamed is liable to a recurrence of the inflammation, it is presumably less resistant, and in this regard also such a valve is likely to incur disease in after life.

CASE OF CHROME POISONING.

BY A. M'CRORIE, M.B., SHOTTS.

As cases of poisoning by bichromate of potash are rare, very few being recorded in the text books, perhaps the following may be interesting.

At 8·30 A.M., 10th March, T. W., aged 20 months, swallowed a piece of " red chrome." I was summoned to go and see him an hour afterwards. I found him lying in bed in a semi-comatose condition, with countenance extremely livid, eyes half closed, pupils dilated; respiration difficult and wheezing; pulse almost imperceptible; tenderness on pressure over the abdomen, very marked over the stomach, causing him to cry and immediately draw up his legs; signs of vomiting and purging.

An emetic of ipecac. and sulphate of zinc (equal parts) was at once administered, producing copious vomiting, the vomited matter being at first distinctly coloured yellow with the chrome. This was followed by a draught of about ʒiv of olive oil which happened to be at hand. Patient seemed a little relieved for about an hour, when vomiting again set in, a considerable quantity of the oil being brought up. Having great thirst, he readily took a mixture of milk and chalk; encouraged to take this he soon swallowed about a pint of it. About the same quantity of chalk, milk, and water, was given in the form of an enema. Soon he had recovered so far that I was able to leave him for a time. Two hours later he again became comatose, and passed into a state of collapse, with skin cold, and covered with cold, clammy sweat; extremities very cold, and pulse imperceptible at the wrist.

Teaspoonful doses of brandy and tea were now given. He recovered a little, and could be roused by calling him by name, but whenever left alone he fell into the same semi-comatose condition. He remained in this state till 6 P.M., when he was seized with convulsions and died—about 9½ hours after swallowing the poison.

Remarks.—The piece of chrome was said to have been the size of a pea, and would probably have weighed from 5 to 10 grains. The mother, ignorant of its poisonous nature, never imagined there was anything wrong with her child till he turned " black " in the face, and was seized with purging. To have a complete report a *post-mortem* was necessary, but such was not permitted.

CURRENT TOPICS.

THE DISPOSAL AND TREATMENT OF PAUPER AND PRIVATE
LUNATICS.—The insane belonging to the upper classes of society,
and to that section of the middle class in comfortable circum-
stances, are amply provided for in our Private and Royal
Lunatic Asylums; and it may be stated, generally, that for
such not only the necessities but all the amenities of living
can be obtained by providing the means for the necessary
outlay.

With pauper patients, however, and with a large section of
private patients who belong to the lower stratum of the middle
class of society, the case is very different. As regards that
section of pauper patients, properly so-called, who would be
paupers although their illness did not assume the form of
mental aberration, it is obvious that their disposal is easy
enough through their natural guardians, the parochial author-
ities; but there are large numbers of lunatics who become
chargeable to their respective parishes who would never be
placed on the poor's roll were their case one of ordinary illness.
This may be accounted for by a variety of causes, such as an
increasing disposition, on the part of natural guardians, to
throw the burden of their lunatic dependents on the parochial
authorities; and also inability to meet the large expenses of
asylum care and treatment for a lengthened period. In many
cases it is almost impossible to make the three months' pay-
ment in advance, together with other necessary expenses,
without involving the family in debt and permanent
difficulties.

We are glad to observe that this class of cases has had the
careful consideration of the Directors of the Glasgow Royal
Lunatic Asylum, and that they have adopted a reduced scale
of charges as applicable to them. This is certainly a move-
ment in the right direction, and it is to be hoped that the
example of the Glasgow directors may be followed by those of
our other chartered asylums in Scotland. The original *raison
d'être* of our chartered asylums does not now exist, as the
District Boards of Lunacy are bound to provide suitable
accommodation for their pauper lunatics, while the requirements
of the wealthy may be provided for by private enterprise,
according to laws of demand and supply. These facts seem to
be practically recognised by the public in general, and by the
benevolent rich in particular; for we scarcely ever hear now

of legacies being gifted to our chartered asylums. But these asylums exercise a great public charity in providing superior accommodation at low rates for those who, through their insanity, have sunk from a good social position down to pauperism. It is a bitter aggravation of their affliction to be classed with paupers, and there can be no kinder or truer charity than to save them from this sorrow by enabling our asylum directors to admit them at specially low rates of board.

The rich being able to find accommodation for themselves, and those just above the pauper's grade being thus kindly aided by public charity and public institutions, we may consider what provision should be made for the pauper insane.

Insanity is a term comprising numerous physical diseases which admit of classification, some being curable, others incurable, while all admit of tentative efforts in the way of cure, on the first manifestation of symptoms; and the generally recognised fact holds good, as in all other diseases, that early and appropriate treatment is of paramount importance. For the cure and care of ordinary cases of illnesses we recognise the necessity for public hospitals and homes for incurables; and, in like manner, there is a necessity for asylums for the *treatment* of acute curable cases, and another class of asylums for the *care* of chronic incurable cases. Our hospitals would become huge, unwieldy institutions were all the patients retained within their walls until cured or dead; they would become blocked up with incurable cases, to the exclusion of the acute and curable. So is it now with our public asylums; they are crowded with the hopelessly incurable; many patients are moving about now in much the same condition as they were twenty years ago; the splendid capabilities of our public asylums are uselessly frittered away, and the energies of our highly accomplished and specially qualified superintendents and assistants are in great measure allowed to run to waste.

In almost every case, both in England and Scotland, in which county or district asylums have been erected, a period has arrived at which extensive additions have had to be made; but it has been found impossible or undesirable to make corresponding additions to the asylum grounds, the inevitable consequence being that the asylum becomes less a curative institution, and more and more an insane boarding house.

Perhaps it is fortunate that the Glasgow District Board of Lunacy has allowed twenty or more years to elapse without having taken any but infantile steps for the disposal and

treatment of the Lanarkshire insane; for they may thereby avoid the errors into which others have fallen, and profit by their experiences. The asylum at Bothwell, recently acquired by the Board, which may accommodate about 150 patients, can never adequately serve any useful purpose unless it be utilised as a home for imbeciles.

On 1st January, 1879, there were, in the County of Lanark, 1,373 pauper lunatics, and of these 1,274 were in establishments and 99 in private houses, the number intimated during the year having been 500. Of those intimated, 488 were placed in establishments, and 5 similarly placed were cases of transfer. The recoveries amounted to 221, and the deaths to 120, while 61 were removed from the poor roll.

Numbers such as these demand not only careful disposal, but discriminate classification, which can only be accomplished by having for the district two types of asylums, one being specially adapted for the *treatment* of *curable* patients, and the other for the *care* of the *incurable*. We have already two admirably equipped asylums—viz., the Glasgow Royal Asylum and the Barony Asylum at Lenzie, one or other or both of which should be made available for the treatment of all the acute cases, and for the treatment of such cases neither of these asylums would ever require enlargement. Should it so happen that additional accommodation were required for acute cases, another asylum should be erected, as the population of curative asylums should never exceed 250 or 300.

The 500 fresh cases which annually arise in the population of Lanarkshire should be, in the first instance, treated in the curative asylums, say for six or twelve months; and, when pronounced incurable, should be transferred to a County Asylum erected for the special accommodation of such patients. An asylum for chronic incurables should be situated in a country district where land, in abundance, could be procured at a reasonable rate; so that ample opportunities might be afforded for healthy out-door occupations. An asylum so situated, say in some portion of the Upper Ward of Lanarkshire, might be so constructed as to be capable of indefinite extension; and its architectural features might be of the plainest possible description, exclusive attention being paid to substantiality, convenience of arrangement, and comfort.

By some such mode as we have indicated the resources of existing-institutions might be utilised and developed to their fullest extent; the insane poor would be placed under the most favourable conditions as regards cure and care; and a great saving of public funds would be effected by having a

plain, commodious, substantial building, in a rural district, rather than a palatial erection in a suburban district which would never admit of any expansion.

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The medical world in Glasgow is at present in a state of acute excitement in regard to medical appointments vacant or about to be vacant. The ball was set rolling by the announcement that an additional physician and surgeon would be appointed to the Western Infirmary. The appointment of Dr. Tennent as physician was only what was expected; but a very natural feeling of vexation is felt by many at the appointment of Dr. Cameron over the head of Dr. Lyon, who has bestowed so much time and ability on the Dispensary of the Infirmary. Dr. Cameron's appointment to the Western Infirmary has left two vacancies in the Royal Infirmary, namely, Surgeon and Lecturer on Surgery. The former of these has been filled by the appointment of Mr. H. E. Clark, and the latter by Dr. William Macewen. These various appointments leave numerous vacancies, such as Dispensary Physician in the Western Infirmary, Dispensary Surgeon and Lecturer on Medical Jurisprudence in the Royal Infirmary, &c. It may be long before a state of equilibrium will be reached, as each set of appointments may, up to a certain point, leave fresh vacancies.

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REVIEWS.

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A Directory for the Dissection of the Human Body. By JOHN CLELAND, M.D., F.R.S., Professor of Anatomy in the University of Glasgow. Second Edition. London: Smith, Elder, & Co. 1881.

THIS work differs considerably, both in its aims and scope, from the ordinary dissecting-room manuals. The plan which the author has followed is explained and supported in the preface. From it we gather that the object of the work is twofold—viz., to serve as a practical guide to the student in the best methods of dissecting, and to enable him to recognise the structures exposed by their names. All descriptions of

the relations, &c., of the various parts are omitted, as Dr. Cleland considers that "the student ought to study the 'subject' in the dissecting-room and his books at home." We quite agree with the necessity of a student studying the "subject" in the dissecting-room, but fail to see any objection to a student consulting his descriptive manuals with the dissected part before him. We were in the habit of employing the classical manual of Ellis in this way, and do not believe that by adopting this practice we "substituted for real knowledge of anatomy a mere appearance of knowledge." If this method were generally followed, more of our manuals would be written in the dissecting-room and fewer at home.

Although we consider that this work would have been improved, and certainly more used by students, had it been combined with brief and accurate descriptions of the different regions dissected, yet in the department to which it is professedly limited it will be found to contain a large amount of valuable instruction.

When the "subject" is first brought into the dissecting-room it is directed that the body, if a male, should be placed in the lithotomy position for the dissection of the perineum; if a female it should be at once placed upon its face. At least *one day* is allowed for the dissection of the male perineum. In this position the student is very properly advised to expose the prostate and base of the bladder; but all this cannot be carefully done in one day. As a considerable part of the student's time is occupied with lectures, demonstrations, and other practical classes, and as only one can conveniently dissect at a time, we would say that three days should be allowed for this dissection. The reason why the perineum is hurried over so rapidly is, that the other dissectors are kept waiting until it is finished. This can be obviated, so far as the dissectors of the head and neck are concerned, by placing the body, while in the lithotomy position, upon a short table, and having the scalp dissected and the brain removed while the perineum is being dissected. By this plan the brain is much more likely to be removed in a good condition than if allowed to remain until the body is turned on to its back.

After the perineum is dissected, it is recommended that the body be placed upon its face for four days. The dissectors of the extremities now commence. As these are the parts that the junior student generally dissects first, the directions should be especially clear and precise. With regard to the upper extremity, we doubt the wisdom of the instruction given. The dissector of the upper limb is directed not merely to

dissect those parts which connect the upper extremity with the trunk (with the exception of the cervical portion of the trapezius), but to dissect the deep muscles of the back, and, if a senior student, to remove the spinal cord. These muscles are very complex and difficult for a junior student to define, and, as they have no connection with the upper extremity, we consider it much better that, while the body is on its face, the dissector of the upper extremity should follow the plan recommended in most schools—viz., simply dissect the first two layers of muscles, except the cervical portion of trapezius and origin of levator anguli scapulæ, and leave the other layers and the spinal cord to the dissector of the head and neck. No regular attempt is made to guide the student in ascertaining the position of the fissures and convolutions of the brain. The fissure of Rolando is mentioned, and the convolutions bounding it in front and behind are called anterior and posterior ascending parietal convolutions. In a foot note we find the following:—" This is the nomenclature of Gratiolet ; latterly a habit has crept in of calling these convolutions ascending frontal and ascending parietal." We think it is a habit to be commended. The fissure of Rolando, from its constancy and the early period at which it appears, is justly regarded as a primary fissure separating the frontal from the parietal lobe. Such being the case the terms employed by Gratiolet are obviously inappropriate and misleading.

We have ventured to dissent from some of the views of the author ; but taken as a whole, the work may be commended to the attention of students and young demonstrators as a sound and thoroughly practical guide.

The Structural Anatomy of the Female Pelvic Floor. By DAVID B. HART, M.D., F.R.C.P.E. Pp. 42. Edinburgh : Maclachlan & Stewart. 1880.

THIS essay was Dr. Hart's thesis for graduation at the University of Edinburgh, and for which he obtained a gold medal and the Syme Fellowship. The object of it is to consider the floor of the female pelvis from a structural point of view. In order to this, observations were made on sections of frozen female cadavera. The author divides the soft parts in the cavity of the pelvis into two segments, the pubic and the sacral. The former consists of what extends from the symphysis pubis to the anterior vaginal wall, the latter what lies between the sacrum and the posterior vaginal wall. In connection

with the natural opening up of the soft parts during parturition, it is shown that the pubic half is drawn up, and the sacral one pushed down, so that a passage is opened for the child just as a person would pass through folding doors, pulling one half and pushing the other.

The term "prolapsus uteri" is considered to be a misleading one, as the uterus does not fall, but is pushed down, the result of intra-abdominal pressure, together with insufficient support. The disease is looked upon as a true hernia, like inguinal hernia, and the appellation "sacro-pubic hernia" is suggested.

Dr. Hart calls attention to the fact that supra-pubic palpation is no secure guide to the degree of distension of the bladder, for where the unimpregnated uterus is retro-flexed, it may contain a large quantity of urine without appearing much above the pubes, while in the pregnant state only the upper part of the bladder is available for holding urine, and a small quantity in the flattened-out organ gives the appearance of great distension.

The author denies altogether the "lever theory" of pessaries commonly believed, and urges the view that they simply lie between the anterior and posterior vaginal walls, supporting the uterus by traction upwards on the cervix through its attachment to the posterior fornix of the vagina.

In speaking of prolapse of the uterus, with supra-vaginal elongation of the cervix, the opinion is given that such elongation does not exist. Dr. Hart says, "Now to the acceptance of this pathological condition, as stated by Schroeder, I have the following objections:—If the displacement in prolapsus uteri be due in some cases to a simple growth downwards of the supra-vaginal portion, the mechanism of displacement, so far as the anterior wall of the vagina is concerned, must be that it unfolds from above downwards, just as when the uterus is hauled down. This, however, is not the case, as the vaginal wall always appears from below up. Primary prolapse of the anterior vaginal wall is supposed to occur, and to pull on the cervix, causing hypertrophy in its supra-vaginal portion. Now, primary prolapse of the vaginal wall alone is anatomically impossible. The part seen coming out at the vaginal orifice is the anterior vaginal wall, but really the whole pubic segment, and uterus too, are being pushed down by the viscera. Then the ligaments are supposed to keep the fundus *in situ*, and thus allow of tension of the cervix. They are not strong enough for this however. Further, I cannot conceive how a prolapsus vaginæ can be pushed down by visceral force, and the uterus not driven down too,

pari passu. . . . I have never found the enlargement of the uterus greater than five inches—a length incompatible with the fundus remaining in position. In this my observations agree with those of Barnes."

In answer to this it may be stated that Schroeder's view, even as quoted by Dr. Hart from the American translation is, " That the prolapsus vaginæ exerts general omnilateral traction on the cervix. . . . Should the uterus be retained in its position by normal or pathological supports, and thus be unable to follow the traction of the vagina, a drawing out of the cervix in a downward direction easily occurs, usually not merely a simple elongation with attenuation, but, through the irritation, an increase in bulk of the whole cervix. The uterine hypertrophy, generally about 6 inches, is chiefly confined to that portion of the cervix which is situated above the vaginal insertion. As a rule, this condition is due, as stated above, to the primary prolapse of the vaginal mucous membrane."

Thus we see that the upper part of the vagina does not come down first, because it is the relaxed and hypertrophied vaginal wall which drags down the cervix, not the cervix which hauls down the vagina. While the author may quote Dr. Barnes in regard to the depth of the uterus seldom exceeding five inches, he cannot quote him as an unbeliever in hypertrophic elongation of the cervix, for he not only believes that it exists, but also that it is the most frequent of all the forms. Again, if the author feels inclined to deny that the vaginal walls ever can drag sufficiently on the cervix to cause hypertrophic elongation, what does he make of the occasional well marked and rapid shortening of the uterine cavity after replacement? We are quite disposed to agree with the theory that, where prolapse results simply from intra abdominal pressure, the uterus must get forced down along with the vaginal walls.

Those who read the text are requested to verify what is said there by reference to the plates drawn from nature, and with which " there has been no meddling nor trimming to suit any one's fancy or theory, so that measurements, &c., can be made on them just as on the actual specimens themselves."

And yet, when one does so, there are found things hard to be understood. On page 25 we are told that " the peritoneum passes over the fundus of the empty bladder and then to the anterior surface of the cervix uteri; over the anterior surface of uterus, fundus uteri, and then down the posterior uterine aspect. It extends down to a lower level here than it does in

front, and is then reflected upwards on the structures lying in front of the sacrum. Its dip behind the uterus is known as the pouch of Douglas. This part is important as being the lowest portion of the peritoneal cavity and, consequently, the first part to be filled with free effused blood. It is only when the bladder is distended that we get a vesico-uterine pouch, in such a section as is shown at Plate I."

On referring to the plate in question, we find that the peritoneum runs from the fundus of the bladder, *not* to the anterior surface of the cervix uteri, but down behind the bladder as far as half way along the anterior vaginal wall. Thus the vesico-uterine pouch is represented as the deeper one. It is true that the two peritoneal surfaces lie together, but effused blood could easily find its way between them. We are ordinarily taught, and in sections of the female pelvis as given in books, we usually find, that the passage of the peritoneum from the bladder to the uterus takes place about the level of the os internum. See, for example, fig. 328, vol. ii, Quain's *Anatomy*, 8th ed. This is a very important practical point to those who have much to do in the way of operating in that region.

The essay is illustrated by two large lithographic plates and twenty-six engravings on wood, all of them much above the ordinary style of illustration in medical works. We have read it with great interest and considerable profit, and believe that its publication will be of service to the obstetrical world.

Lectures on Syphilis, delivered at the Harveian Society. By JAMES R. LANE, .F.R.C.S. London: J. & A. Churchill. Second Edition.

THIS is a second edition of a reprint of three lectures delivered in 1876, the first edition having appeared in 1878.

The first lecture consists of a terse and clear historical review of the subject from the time of Hunter. When speaking of Hunter's well known inoculation of himself with syphilis, the author suggests that the extensive cardiac and vascular disease, which eventually caused Hunter's death in 1793, may have been a remote tertiary result of this unfortunate experiment made twenty-five years previously. The author's summary of present opinions on the "duality" question is probably a very fair statement of the case; he says—"There is a strong probability that an indurated sore will prove infecting; and there is a probability, though not nearly so strong, that a soft suppurating sore will not; but exceptions to

both these general rules will be met with, and there is really no absolute proof of the infecting nature of any given sore, but the fact of infection itself." The section on "syphilisation" is full and interesting, and that on phagedæna will commend itself to those who are interested in recent researches on traumatic infective diseases.

In the second lecture are discussed various points connected with contagion, heredity, &c. The author is clearly of opinion that constitutional syphilis is entirely curable, *i.e.*, removable by treatment, and in proof quotes published cases to show that the disease may attack cured patients as if they had never had it before. He seems inclined to agree with Hutchinson that the disease ceases to be a "blood disease" after the secondary stage, and to bear out this, states as a general rule "that when the parents have fully reached the tertiary stage the children born to them are free from all signs of syphilis." At the same time, when brought to face the question of persons who have had syphilis marrying, he hesitates about acting fully up to this belief. On this point he says the opinion given "should always be a very guarded one. It is impossible to fix with any certainty the time when the taint has passed away, but a year at the very least should have elapsed after all the symptoms have disappeared before a man is justified in marrying; and he should be told that even then he does not do so without risk, the responsibility of which he must take upon himself." The special sections on contagion and heredity are very complete, and the best in the book. The subjects of vaccino-syphilis, and the inoculability of the blood and physiological secretions of syphilitic persons, as well as of the discharges from secondary sores, are briefly and clearly sketched. The different methods mentioned in which syphilis may be acquired accidentally are worthy of note, though of course the author does not assert that they are other than very exceptional. Hereditary syphilis is described as transmissible—"(1) From father to child; in connection with which arises the question whether the mother may remain healthy throughout, or whether she will probably be infected by the diseased fœtus during pregnancy; (2) from a previously healthy mother who becomes infected during pregnancy; (3) from a previously diseased mother, the father being healthy; (4) when both parents are diseased." The prospects of the offspring are thus generally summarized:—"Syphilis may be transmitted in every one of the ways above mentioned, but in every one of them there is a possibility that the child may escape. The older the disease in the parents, the greater is the chance of

immunity." The chances under the various conditions mentioned above are discussed in detail.

The third lecture, on treatment and legislative prevention, is the least satisfactory part of the book. That cauterization is the proper treatment for primary sores or for phagedæna, mercury for secondary disease, and iodide of potassium for tertiary, readers scarcely require to be told, and there are many points connected with the treatment of less common forms of the disease especially in its later stages, hereditary syphilis, and various complications, which it would have been much more useful to discuss. Probably most who have tried different forms of mercury will be inclined to prefer the bichloride to the blue pill and grey powder which the author recommends. It is certainly more reliable and much more manageable, and has as little disturbing influence upon digestion, &c., as could be wished. With it, properly used, it is certainly unnecessary to produce any of the effect upon the gums which he seems to think necessary when using these other forms of the drug. The author, with some diffidence however, states his opinion that syphilis possibly, if not probably, is a self-limited disease, and that many cases would recover if left alone, and mentions several eminent authorities who have avowed the same belief. How this can be reconciled with the character and very indefinite period of tertiary symptoms it is difficult to see, and the cases in which well marked tertiary symptoms supervene in patients in whom the primary and secondary stages have scarcely been noticed, tell very strongly against such a view. At all events, he must be a very courageous surgeon who will venture to act, or rather refrain from action, upon such a theory, and he will find it difficult to persuade patients to submit to purely expectant treatment in such a disease. The mere questions of the possibility of transmission to offspring would in almost all cases decide in favour of active treatment.

In the section on legislative prevention the author speaks clearly and decidedly in favour of the continuance and extension of the Acts.

The aim of the author of these lectures is avowedly more to give "a concise sketch of what may be considered to be the generally accepted views of the profession at the present time" than to bring forward any original views, and the book is the outcome of careful reading rather than of original investigation. At the same time it is evident that the author's clinical experience has been sufficiently extensive to enable him to appreciate clearly the practical bearing of the various knotty

points in the much debated subject of syphilis. As it stands, the book suffers much from being too small; several of the sections, particularly that on treatment, would be much improved by considerable extension. To those, however, who have not leisure or inclination to wade through a wide and constantly increasing literature, this concise synopsis (of 95 pp.) must be useful. That it has already been found so, the early call for a second edition proves.

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

GLASGOW ROYAL INFIRMARY.

FROM DR. DUNLOP'S WARDS.

NOTES ON A CASE OF ANGULAR CURVATURE OF LUMBAR VERTEBRAE INTERFERING WITH MOTOR FUNCTIONS OF CORD; TREATED BY PORO-PLASTIC JACKET. [Reported by Dr. J. M. Watson, House Surgeon.]—Agnes M'Farlane, æt. 13, admitted to Ward XXIII on March of this year.

History.—Three years ago she was treated by Dr. Dunlop for caries of the same part of the column, and since that she was able to run about, enjoying fairly good health till a few months ago, when the back became weak and painful, especially in going down stairs. Gradually getting worse, she was compelled to keep in bed for six weeks before admission.

When brought in she was in a very helpless condition, having completely lost power of her legs, only being able to move them slightly, and that with great pain when in bed. Her breathing was unaffected, and she had control over both bladder and rectum. There was an angular curvature of lumbar vertebræ, and the slightest pressure elicited pain there. There was also a spot on upper dorsal region painful on pressure, but no curve. Dr. Dunlop ordered a poro-plastic jacket to be put on, which had to be done in bed, as immediately on being suspended on the tripod she fainted. The effect of the jacket was very marked. Very soon she could move freely in bed without pain. In a week she was able to sit up, and shortly began to move about with a little assis-

tance. Now she has quite regained the use of her limbs, and is able to run about with comfort, her general health, too, being very much improved.

This case is interesting, principally in regard to its treatment. It is a good example of the results obtained by Sayre's principle in its more cleanly, comfortable, and handy modification, the poro-plastic jacket, which has been adopted by Dr. Dunlop. During the last six months he has used it in about fifteen cases, in some as above with the most gratifying effect, and all have been more or less improved.

WESTERN INFIRMARY.

REPORTS UNDER THE SUPERVISION OF DR. W. G. DUN.

AURAL DEPARTMENT, UNDER THE CARE OF DR. BARR.

PEA IN THE EAR FOR TWO YEARS WITHOUT IRRITATION.—Two years ago the patient, a girl of 15, pushed a pea into her right ear. She was at school at the time, and, along with other school girls, indulging in quasi-conjuring tricks—trying to make each other believe that they could put a pea into the ear and take it out by the mouth. No efforts were made to extract the pea, and it produced no pain, although there was considerable deafness on that side. About a week before coming to the Infirmary pain was first felt, and it was this which brought her for advice. Hearing on right side was $\frac{2}{10}$; on the left normal. Tuning fork on bones of head heard better on right.

On examination with the speculum and concave reflecting mirror, the pea was seen filling up the inner end of the external auditory canal, beyond the isthmus or narrowest part of the canal. Manipulation produced great pain, there being evidently recent inflammation set up in the walls of the canal. Gentle efforts to encircle the pea with a wire loop failed. Syringing was then practised, directing repeated streams of water along the roof of the canal, with the right side of the head inclined downwards. After continuing the syringing for a time, the canal of the ear was again examined, when the foreign body was seen to be nearer the outside. By means of a small spatula shaped instrument, slightly bent at the one end, a half of the pea, which the syringing seemed to have separated from the other half, was easily brought away.

Further syringing brought away the remaining half, and, last of all, the capsule was removed. After this the hearing of the patient was $\frac{24}{10}$. The membrane and walls of the canal were much congested, but the parts soon recovered without any further treatment.

Note.—Fatal effects have been known to result from efforts made by instruments to remove a pea from the ear; these efforts being stimulated by the fear, on the part of the surgeon and patient, that such a body, if allowed to remain in the ear, would soon lead to dangerous consequences. This case shows, like others of a similar kind, that a foreign body, especially if rounded and smooth, may lie in the ear for a very long time without provoking any painful or dangerous symptoms.

MASTOID PERIOSTITIS—VALUE OF A FREE INCISION.—R. T., aged 16, a rivetter, came to dispensary on 12th March, 1881. He had been suffering from a profuse purulent discharge from the right ear for about a month. It began with severe pain inside the ear, which he attributed to cold, the discharge appearing two days after. When the otorrhœa had lasted for a week, severe pain began in the mastoid process, for which fly blisters were applied by the doctor in attendance. This pain had continued ever since—being very intense at night, and shooting over the whole side of the head, so that he had got very little sleep for three weeks. There was also a constant and most distressing "hissing" in the ear.

When patient presented himself at the dispensary he seemed ill, being haggard looking and very pale. There was quick pulse, increased temperature, and no appetite.

On looking at patient from the front, the right auricle was seen to project much farther from the head than the left. Pus was issuing from the right ear. Behind the auricle, and extending for about 3 inches, there was considerable inflammatory swelling, which was hard and very tender on pressure; but there was no fluctuation or other sign of pus. The sub-auricular glands were swollen and tender. The soft tissues of the external auditory canal were so swollen that a view of the deep parts of the ear could not, in the meantime, be obtained. A loud ticking watch could only be heard in contact with the auricle, and that very indistinctly. The tuning fork, when applied to the middle line of head, was heard very much better on right side. The diagnosis made was mastoid periostitis supervening upon acute otitis externa.

A free incision (Wilde's), about an inch long, was made behind the auricle, parallel with, and about half-an-inch from,

its attachment to the head. The swollen soft parts were incised right down to the bone. The wound bled pretty freely, but there was no pus. A pledget of boracic lint was placed in the wound, and the patient was ordered to syringe the ear gently with warm water every three or four hours, and to apply a few warm poultices behind the auricle.

He returned on the 15th, and reported that, since his visit, the pain was totally gone, that he had slept well, and felt very much better in his general condition. The swelling over the mastoid region was much diminished, the lumen of the canal of the ear much wider, and the discharge markedly less. Hearing distance $\frac{2}{40}$. From this onward the progress to recovery was uninterrupted, and on 9th April the hearing distance was $\frac{20}{40}$. At this time the tympanic membrane was duller and whiter than normal, but there was no perforation nor cicatrix. No discharge for a fortnight. The slight defect of hearing still remaining is probably due to some thickening of the tympanic membrane, and will probably eventually pass off.

MEETINGS OF SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

SESSION 1880-81.

MEETING V.—14TH JANUARY, 1881.

DR. GEORGE BUCHANAN, *President, in the Chair.*

DR. ALLAN read a paper ON A CASE OF ENTERIC FEVER, IN WHICH QUININE WAS EMPLOYED AS AN ANTIPYRETIC (page 363).

Dr. Hugh Thomson was surprised to find that quinine had so little effect in reducing temperature. So large a dose as 30 grains, in a case of typhoid fever, where the digestive organs were so much deranged, would, he thought, be too irritating to take into the stomach, judging by what he had experienced in giving much smaller doses in cases even where the gastric lining was not so irritable. He had seen a dose of 20 grains cause extreme sickness and depression and vomiting, so that he should have expected the 30 grains to produce even more depressing effects than it had done. With regard to the treatment of typhoid, he thought it was rather the treatment of

symptoms as they arose, the principal part consisting in nourishing the patients and tiding them over the disease.

Dr. Perry thought Dr. Allan had come to the right conclusion, though perhaps it was rather rash to go upon one case alone. It was, however, in keeping with the conclusions arrived at last winter, after a paper by Dr. Gairdner, in which he reviewed the treatment on the Continent by large doses of quinine and other antipyretics. Small doses may do good by acting as a stimulant and doing away with the necessity for large doses of stimulant, but large doses seemed to him to be rather depressing.

Dr. Gairdner agreed with Dr. Allan in his conclusions, but thought there was a difficulty in speaking from single cases on the action of a remedy, particularly if the action as in the present case was temporary, and where repetition was necessary to bring about any result at all. He had no doubt of the power of quinine and other antipyretics, such as ice, cold water, salicine, digitalis, &c., to bring down the temperature as a physical fact, but he had great doubt of their beneficial action, though in some special cases they might avert dangers, perhaps not without bringing on other dangers. The tendency he thought was to over-rate the value of antipyretics. A case had occurred in his wards quite recently with a certain degree of parallelism to that of Dr. Allan's, and as his observations had been quite independent, it might be interesting to state the circumstances. It was a case of perfectly uncomplicated typhoid fever, for the man had hardly any diarrhœa, very little delirium, and no pain to speak of; his condition was in fact a singularly apathetic immobile one, and but for the thermometer, the infallible test of fever, one would hardly have known that he was suffering from anything. He seemed to have been three weeks ill when first seen on 18th December, when his temperature was 104° F., and there were rose spots in enormous abundance. The temperatures oscillated a good deal, but did not rise above 104° F., and as there was nothing calling for active interference, he received the normal treatment of typhoid, milk diet, plenty of milk, and watery drinks, and general care. On 28th December the temperature touched 104° F., and near midnight he got 30 grains of quinine in divided doses, and this was followed by a fall of 7° within twelve hours, to 97·2° F.; the pulse going down from 80 to 64. Next day the temperature had risen to 103·8° F., and quinine was again given with a fall of 6°, but it rose within twenty-four hours again to 103·8° F. No quinine was given this time, and there was a fall of 3° or 4° spontaneously. Next

night it rose to 104·2°, and again quinine was given, followed by a fall of 8° to 96·4°. He was left alone after this without any quinine. The temperature continued to oscillate, but did not again rise to hyper-pyrexia. It will be seen that though the effect of individual doses of quinine is exceedingly marked, its influence on the progress of the disease is very small. There was abundant time to see this, for the patient is now in the sixth week of the fever, and still the temperatures are not normal. There has been a gradual fall of the temperature since the fourth week, and quinine did not shorten the fever at all. If the action of quinine be so temporary and so purely on the temperature, are there not other disadvantages to be taken into account ? Can any one knowing the importance of nourishment in typhoid fever say that the administration of quinine in 30 gr. doses every three hours is conducive to the proper treating of the fever ? He thought that the adminis-tration of a poisonous drug like quinine, unless to overcome a symptom of paramount importance, was bad treatment, and that the results in Glasgow, with far less active treatment, were just as good as those by antipyretics. Liebermeister, in his later papers, says that he does not give quinine as a routine practice, but no rules or guides are set down as to when to give it, and how often. It would be interesting to have a trial made in the fever hospital of the cold bath treat-ment in some suitable cases, so that a comparison could be made.

Dr. Allan reminded Dr. Gairdner that they had to consider two aspects of the question, and not only the medical, for if the public knew their friends were to be plunged in cold baths which, to them, would seem an unjustifiably heroic treatment, the difficulty, which was already great, of inducing them to come to hospital would be increased.

DR. COATS showed SOME SPECIMENS ILLUSTRATING CON-GENITAL MALFORMATIONS OF THE AORTIC VALVE. His obser-vations will be found at page 372.

Dr. Gairdner mentioned, with regard to the last specimen shown by Dr. Coats, in which there was a complete diaphragm in place of the aortic valve, and also disease of the tricuspid, that the history of the case was certainly that of rheumatic endocarditis about five years before death ; but whether that was super-imposed on a congenital condition of the valve or not he could not say. Dr. Peacock, in his book, places congenital malformation of the valves as one of the predisposing causes of disease of the valves, and ranks it as almost one of the chief. To show how long these little lesions

may lie latent, he mentioned the case of one of his oldest acquaintances. He told him that he had become aware of something wrong with his aortic valve so long ago as when he was attending the clinique of Laennec; that he had got a flexible stethoscope and had auscultated himself, and had had a great deal of worry about it. It passed from his mind, however, in time, and he went on with a large practice, dying at the age of 70 of tubercular peritonitis. At the *post-mortem* examination the aortic valves were found malformed, and the heart not hypertrophied, but atrophied, in accordance with the tubercular condition.

Dr. M'VAIL brought before the meeting a patient suffering from the CONVULSIVE TREMOR described by Dr. Hammond.

The patient, a lad twenty-three years of age, is subject to chronic convulsive attacks affecting the muscles that proceed from the spine to be inserted into the occiput, together with a few of the upper fibres of the trapezius. No other muscles than these are affected.

Each attack lasts for about ten minutes, and during its continuance, if the observing hand be placed on the affected muscles, the contractions are felt to be at about the rate of ninety in the minute, occasionally faster and occasionally slower. When the patient first presented himself at the Western Infirmary Dispensary he had two or three seizures every day, and invariably one when he laid his head on the pillow on going to bed. An attack could at any time be brought on by pressing the hand firmly on the top of the head.

The ailment first made its appearance more than two years ago, when he was reading a placard on the street. It recurred a month afterwards, and after this every day or two, and soon every day. About a year ago he had occasional very slight and brief trembling movements of both arms, but never so severe as to cause him to drop anything he might have in his hand at the time.

He had been very considerably under medical treatment without any good result. As the symptoms seemed to point to the motor convolutions about the fissure of Rolando as the probable seat of the morbid action, blisters were applied to the scalp in that neighbourhood, and considerable improvement has followed. On several days he has had no attacks save the one on putting his head on the pillow at night; it is intended to repeat this counter-irritation at short intervals for some time to come.

Meeting VI.—4th February, 1881.

Dr. George Buchanan, *President, in the Chair.*

Dr. Robert Kirk, Partick, read a paper on researches on albumen, with special reference to albuminuria, which appears at page 337.

The President expressed his appreciation of the merits of the paper, especially in the application of chemical knowledge to pathological facts.

Dr. Newman said he also had worked at the subject of albumen, and agreed generally with Dr. Kirk. He had paid attention to albumen in fluids—as from ascites, ovarian cysts, &c. The presence of salts is an important factor in the behaviour of albumen. When dialyzed, these fluids gave similar reactions in all cases, and so the differences in these fluids described in books disappear on dialysis. Dialysis must be carefully executed—a shallow dialyser and distilled water for three or four days being necessary. When thus effected, salts almost disappear, as shown by nitrate of silver giving very little precipitate of chlorides. The test described by Dr. Kirk, of the addition of soda and then nitric acid is very important and very delicate; but picric acid is equally so. Dr. Newman has tried chromic acid, and it is also equally delicate. He adds salt to the chromic acid solution. In testing he adds the urine to the chromic acid solution; and in using nitric acid, also, he puts the acid into the test tube first.

As to physiology he agreed that albumen passes through the Malpighian tufts of the kidney in health. Some years ago, Dr. N. read a paper showing that albumen passes through membrane, especially in the presence of cystalloids. In health, a certain amount of albumen passes, and is absorbed along with other constituents. Observations in a case by Dr. Finlayson seemed to indicate that albumen is absorbed even by the bladder. In this patient albumen was present in the urine at night, but not in the morning. He made patient half empty his bladder at night, so as to leave some albuminous urine in it, but next morning he found no albumen, showing that the bladder had absorbed albumen. If the bladder does so, then the uriniferous tubules probably do.

Dr. M'Vail thought this paper threw light on hæmatinuria. It is important if it be established that in renalbumen we have a body different from any albumen in the blood. In hæmatinuria we have, in the urine, a very peculiar albuminous body, apparently owing to some peculiar nerve influence acting on the renal cells. There was a case, for instance, in which

washing in cold water brought on hæmatinuria. The pancreas normally secretes albumen, and it would not be astonishing to find the kidney, under peculiar circumstances, secreting this peculiar substance. And so in Bright's disease we may have the kidney secreting this peculiar albumen.

Dr. Kirk agreed with Dr. Newman that the differences described in albumens depend largely on differences of proportions of salt and acid. But the distinctions between ovalbumen, serumalbumen, and renalbumen are sufficient to make out different varieties. It is possible that when large amounts of albumen are present, the kidney epithelium may not be able to alter the whole albumen into renalbumen, and so we may have some serumalbumen in the urine. Dr. K. has not worked with urines with large quantities of albumen.

GLASGOW SOUTHERN MEDICAL SOCIETY.

Session 1880–81.

Meeting VII.—27th January, 1881.

Mr. Gilmour, *President, in the Chair.*

Dr. Finlayson read an account of a CASE OF INTESTINAL OBSTRUCTION. A girl, 13 years of age, was admitted to the Western Infirmary on 9th October, suffering from paroxysmal pains in the abdomen, evidently due to intestinal obstruction. These violent pains were of three or four weeks' duration; but a week or so before they assumed this character, there had been an attack of abdominal pain, supposed by the attendant at that time to be due to peritonitis. But while this was the duration of the more serious or violent part of the illness, it appeared from the mother's statements that for some months the child had suffered from pains in the belly, occurring perhaps once a day, to which little attention was paid at the time, and that this had become more noticeable by the month of July.

That the paroxysmal pains present on admission were due to some obstruction was plainly shown by the appearance of largely distended coils of intestine rising up while the spasm lasted; the coil was usually in the lower part of the abdomen, a little below the umbilicus, but occasionlly this swelling up occurred in other parts of the belly, and sometimes two or

even three distinct swellings or coils could be seen at once. This rising up of the distended intestine was spoken of by the girl as a "lump" or "lumps," and presented both to the eye and hand very marked elevations. Along with the pain and the lumps she also spoke of a rumbling noise as almost always present from the first; and, during many of the paroxysms witnessed in the hospital, this noise was often loudly heard.

From the time that the paroxysmal pains appeared, vomiting had frequently occurred, and shortly before admission the vomited matters had assumed a somewhat fæcal odour at times, and her admission to hospital was determined on from the occurrence of this symptom.

But although violent paroxysmal pains, and even fæcal vomiting existed, the statement given on admission was that the bowels had never been confined for more than two days or thereby at a time, and the course of the illness confirmed the probability of this account.

The previous history of the girl bore that she had had scarlatina, measles, and hooping-cough in rapid succession when five or six years old, and ever since then she had been somewhat delicate. About the same time she had an attack of what was termed inflammation of the lungs or pleurisy, and several repetitions of the chest affection had occurred. The father of the patient was also known to have been phthisical.

In view of the present aspect and previous history of the patient, it was supposed that the obstruction was due to tubercular peritonitis, and that very likely the chest affection referred to had been of a tubercular nature.

The course of the case was remarkable, however, in this respect, that the paroxysmal pains were extremely violent, and that they continued to recur although the bowels were often well relieved, not only by enemata, but also spontaneously. It was stated, indeed, on admission that the interval between the movements never exceeded two days, and during her residence free evacuations were often obtained daily; but this seldom or never procured relief from the paroxysmal pains, even for a few hours. Vomiting occurred occasionally during her residence in the hospital, but it never constituted a prominent feature of the case.

The treatment was directed to allay the pain by the free use of morphia; enemata were occasionally used, and food was given in small quantities and nutritious forms. The child, however, was evidently getting thinner, and latterly a troublesome cough supervened. On admission, no definite evidence

of chronic lung disease could be obtained (notwithstanding the history of inflammatory attacks), but with the occurrence of the cough some fine moist râle was detected in the back of the chest, and some dulness on percussion was made out in the left apex behind, and some undue tubularity of the respiration at the same situation on the right side. These signs, although obscure, were supposed to be connected with phthisical processes going on in the lungs.

The girl died after a month's residence, worn out by the pain and the want of food: latterly, also, she suffered much from cough and dyspnœa, and just at the end a tendency to diarrhœa appeared with the subsidence of the spasmodic pains.

The *post-mortem* examination showed that the nature of the case had been to some extent mistaken. There was, indeed, the evidence of peritonitis at the seat of the obstruction, and there was the evidence of tubercular or scrofulous disease in the chest; but the phthisical disease had not involved the lungs or pleura as supposed, and the peritonitis was limited in extent, and apparently local in origin.

Under the sternum great masses of scrofulous glands were found, especially in front of the trachea and at the origin of the bronchi. The glands were of a cheesy appearance on section, some of them more pultaceous. The pleura showed no signs of either old or recent inflammation; the lungs presented a certain amount of emphysema at the apices and margins, and throughout both very extensive areas of collapse were found.

On opening the abdomen no evidence of general peritonitis was found, but the lower part of the great omentum was adherent to the bowels in the neighbourhood of the cæcum. The parts in this situation were considerably matted together, but not over an extensive area.

The ileum just above the valve was found to be greatly increased in calibre, and the muscular coat was much thickened. The colon, on the other hand, seemed smaller than usual, and on opening it and passing the finger down, it was found to be blocked. On passing water with some force through a small portion of the ileum a little oozing was found to take place. The *caput cæcum* was greatly contracted, so as to be scarcely recognisable as such, and was matted together with the vermiform appendix, omentum, and adjacent parts. On laying it open, the walls of the cæcum and adjacent part of the colon were found much thickened, the mucous membrane was also very thick and irregular, with ulcerated surfaces; the origin of the vermiform appendix was dilated into a small cavity, and

it was supposed rupture may have occurred at this spot at one time, although the adhesions were such as to render this uncertain; the rest of the appendix was twisted up and adherent to the bowel; the ileo-cæcal valve itself seemed unaffected by the disease. There were no accumulations in the cæcum, a very small fragment of some fruit skin was found, but this seemed to have no bearing on the disease.

The history of the case in view of the *post-mortem* examination seemed to be somewhat as follows:—Development of scrofulous glands in the mediastinum, in a predisposed subject, in connection with measles, &c., in childhood; the subsequent occurrence of attacks of broncho-pneumonia, collapse of the lung and emphysema; inflammatory disease in the cæcum and vermiform appendix, probably from retention of fæcal matter there, manifesting itself by occasional griping pains and leading to ulceration, thickening, and contraction; rupture of the vermiform appendix at the date ascribed to the attack of peritonitis; obstruction of the bowel, partly perhaps due to the peritonitis, but chiefly to the increasing stricture in the cæcum and colon.

Dr. PATTERSON was announced to read an account of another case, but was unable to be present. Dr. R. W. Forrest and Dr. Finlayson gave a verbal summary of this case, as it had been to some extent under their care and observation, but a report will afterwards appear in full in our pages.

MEETING IX.—FEBRUARY 24TH, 1881.

DR. T. F. GILMOUR, *President, in the Chair.*

PROFESSOR JAMES MORTON read a paper on FURTHER EXPERIENCES ON SPINA BIFIDA.

Dr. Morton, after narrating a number of cases, summed up as follows:—

In his book on *Spina Bifida* 15 cases are recorded, of which 12 were successful. Of the 3 deaths 1 was hopelessly deformed and paralysed, 1 died from causes unconnected with this malformation, and the third was considered a case of encephalocele situated in the nape of the neck.

The last of these cases operated upon by Dr. Morton appeared in the *Lancet* for 2nd December, 1876.

Since the beginning of 1877, Dr. Morton has seen or known

of the result of 18 cases, besides 2 others, as well as a menin-
gocele, at present under observation.

Four of the 18, for various reasons, were not operated upon.
Fourteen were injected with the "iodo-glycerine solution."
Of these 3 were unsuccessful and 11 successful. The statistics
of the operation, therefore, so far as Dr. Morton knows at
present, stand thus:—Twenty-nine cases operated upon with
6 *failures*, or in other words, the "iodo-glycerine solution
treatment" has been the means of a saving of life to the
extent of 79·31 per cent, and if we add to this the 2 spina
bifida cases at present under treatment, and which may be
considered safe, the percentage of success would be raised to
over 80. The case of meningocele stands by itself. It has now
been injected 8 times, the last time with a solution of double
the usual strength, and this without any bad consequence, but
also without the desired effect of causing shrinking of the
tumour and closure of the aperture of communication between
the sac and the serous cavity of the cranium.

MEDICAL ITEMS.

UNDER THE DIRECTION OF

A L E X. N'A P I E R, M.D.

Some Preparations of the Peptones.—To obtain peptones
of a more agreeable flavour than those made with hydro-
chloric acid, M. Petit suggests, in a paper read before the
Therapeutical Society of Paris, that in their preparation
tartaric acid should be used, and he gives the following
directions for doing so:—One kilogramme of beef (without
fat) should be digested for twelve hours, at a temperature of
$50°$ C., with 10 grammes of pepsine porci, in ten litres of a
watery solution of tartaric acid, strength 15 grains to the
litre. When digestion is completed, filter and separate the
filtered liquid into two equal parts, one of which is to be
saturated with bicarbonate of potash and then added to the
second portion. Cream of tartar is thus formed and in great
part precipitated at once; on filtering the liquid, evaporating
to a syrupy consistence, and allowing to cool, nearly all that
remains of the cream of tartar separates in crystals. The
resulting fluid is then evaporated to dryness in a water bath,
when we have a preparation which might be named a

pepsino-tartaric peptone. These peptones may be taken in capsules or *cachets,* or simply dissolved in soup or other liquid. Malaga wine forms an excellent vehicle for them; or they may be made into an agreeable syrup with sugar 60 parts, water 30 parts, peptones 5 parts, and tincture of orange peel 5 parts. An elixir which is pleasant to the taste may also be made according to the following formula :—

Alcohol (strength 95 degrees),	10 parts.
Vin de Frontignan,	40 ,,
Sugar,	25 ,,
Water,	20 ,,
Peptones,	5 ,,

Dissolve the peptone in the water, add the wine and the sugar, and filter.

The author has also a good deal to say regarding the *peptonate of mercury,* a preparation which he states is peculiarly adapted for hypodermic injection, as it causes no irritation, is rapidly absorbed, and is not precipitated by alkalies. It gives excellent results in the treatment of syphilis. This peptonate of mercury is prepared by rubbing together thoroughly 1 part of the bichloride of mercury, 2 parts of the chloride of sodium, and 1 part of dry peptones; this is dissolved in as small a quantity of water as possible, filtered, and evaporated in a vacuum. When dry it is again triturated, and dissolved in distilled water. To prepare a solution for hypodermic injection, containing one per cent of the bichloride, 4 parts of the mercuric peptonate should be dissolved in 100 parts of water. Pills may be similarly prepared, containing 4 ctgr. peptonate, representing 1 ctgr. bichloride.

In the discussion which followed the reading of M. Petit's paper, M. Dujardin-Beaumetz said that he had used the solid dry peptones with great satisfaction. The peptonates of mercury had also yielded excellent results, their action being extremely rapid, specific ulcerations sometimes disappearing in a few days. They had two drawbacks, however; the solution is very unstable, and in his hands the injection had proved very painful, giving rise to induration and inflammation.

M. Joseph Michel spoke very favourably of the peptonate of mercury, having used it in some cases with marked advantage. Subcutaneous injection is particularly valuable when it is necessary to bring the system rapidly and thoroughly under the influence of mercury, as in certain cases of cerebral syphilis; it acts better even than mercurial

friction, and the exact quantity absorbed by the system is known. As regards the stability of the solution, he had used one prepared by M. Petit, which at the end of two months showed no change. Injection also is certainly painful if made superficially, immediately under the skin; but if the needle be thrust well into the tissues, the pain produced is much less acute and lasts only about fifty seconds, while all risk of inflammation seems to be obviated: that at least was his experience.

M. Constantine Paul spoke of having used the *albuminate* of mercury, but had given it up as the solution is alway acid, and is thus badly borne by syphilitic subjects.—*Bull. et Mém. de la Soc. de Thérap.* 15th April, 1881.

The Diagnosis of Cancer of the Rectum.—In the *New York Medical Journal* for April, 1881, Dr. Charles B. Kelsey gives a study of the different forms of cancerous disease met with in the rectum, the chief characteristics of each, and the methods of distinguishing one from the other, and all of them from non-malignant ulceration and stricture. The varieties are enumerated, in the order of frequency, as epithelioma, scirrhus, encephaloid, colloid, melanoma, and osteoid. Of epithelioma he makes two varieties, the lobulated and the cylindrical. The former is the variety most often seen on the lip, and when found at the rectum it begins as a warty growth at the verge of the anus; the latter has its favourite site in the rectum proper, above the internal sphincter, where it forms a soft, friable mass on a hard, ulcerating base, causing a fœtid discharge of blood and pus. Scirrhus is most apt to be mistaken for long standing non-malignant disease, and is best distinguished from it by the clinical history. Encephaloid may be found on section either comparatively firm, or nearly fluid; it is often very vascular, and, when its enclosing capsule has burst, a protruding, fungous mass is the result; its growth is very rapid, and it attains to great size. In colloid the structure is nearly the same as in encephaloid, except that the alveolar spaces are filled with jelly-like material. The author has collected ten cases of melanoma of the rectum, which he believes to be all on record. This variety is easily diagnosed by its gross appearances. Of osteoid cancer, which is also easily distinguished, he has found but one case where the growth was manifestly from the rectum, and not primarily from the pelvic bones. The symptoms of the disease are divided into pain; those due to contraction, to ulceration, to invasion of neigh-

bouring parts; and lastly, the generalization of the disease. There is nothing in the symptomatology to distinguish a malignant from a non-malignant stricture, and the diagnosis must rest upon the history and the physical examination. Dr. Kelsey uses artificial light for his rectal examinations, and describes an arrangement for this purpose, on the same plan as that of Tobold's laryngoscope, the light being movable to any part of the room. With this and a forehead mirror the rectum may be thoroughly illuminated. Fortunately for the diagnosis, most cancerous as well as most other strictures of the rectum are located within reach of the finger. The sensation imparted to the finger is peculiar, and is not easily described. In the early stage, when the mass is firm and hard, and yet circumscribed, and before ulceration has taken place, the disease is not easily mistaken. After sloughing has occurred the appearance of the mass and its feel are diagnostic. Disease at the upper limit of the rectum is best examined for through the abdominal wall. The author has little confidence in explorations of the sigmoid flexure *per rectum*, believing them very apt to mislead. With the finger it can be decided whether extirpation or rectotomy is allowable; and, if the disease is beyond the reach of these measures, there is but one point to be decided—whether colotomy should be done on the right or on the left side: a point which can generally be settled without running the risk of fatal exploration with an instrument.

Chian Turpentine.—For internal use this remedy is best made up in pill form, thus:

Chian Turpentine,	. .	4 grammes.
Sublimed Sulphur,	. .	1·5 „
Powdered Liquorice,	. .	q. s.

Mix, and make 30 pills, two of which should be taken every four hours.

For use externally a good ointment may be made by gently heating 5 parts of the turpentine with 30 of vaseline. [See also p. 79 of this volume of *Glasgow Med. Journal.*]—(*Pharm. Zeit.*) *Bull. Gén. de Thérap.* 31st March, 1881.

Treatment of Burns by a Liniment of Sugar and Lime. —Recognising the efficacy of our *linimentum calcis*, M. Constantine Paul prefers to it a liniment of sugar and lime, which is prepared in the following way:—Equal parts of sugar and slaked lime are pounded together in a mortar, and to this a small quantity of water is added from time to time till the

mixture becomes very liquid. After forty-eight hours it is filtered, and then evaporated to the consistence of a thin syrup. This is then mixed with equal parts of a liquid consisting of one part of glycerine and three parts of oil. For this liniment is claimed the advantage of containing a larger proportion of lime than the same volume of the "Carron mixture."—*Gazette des Hôpitaux.* 26th Feb., 1881.—J. W. A.

Treatment of Neuralgia by Ammoniated Sulphate of Copper.—M. Féréol of Paris has, during the last two years, brought under the notice of the profession the good effects of this remedy in obstinate neuralgia of the fifth pair. He lately brought before the Société de Médicine Publique eight new cases of complete cure, almost all of which had occurred in the practice of others. They are carefully reported, and in most of them a considerable number of the standard remedies had been tried without benefit. Although very successful in many cases, M. Féréol does not claim that the treatment is by any means infallible, indeed in some cases it succeeds for a time and then loses its effect. He does not give it now in solution, as the taste is most disagreeable, and often causes vomiting, but in capsules, each containing about ½ grain of sulphate of copper, with 3 or 4 grains of subnitrate of bismuth. Five of these should be taken in the day, and a small cup of milk should be taken after each.—*Journal de Thérapeutique,* 10th March, 1881.—J. W. A.

Iodoform in Chronic Nasal Catarrh.—Dr. H. A. Eberle treats chronic nasal catarrh in the following manner. He directs that first an ointment should be made, thus :—

> Iodoform, ʒi.
> Extr. Geranium (Solid), grs. x.
> Carbolic Acid, gtt. xv.
> Cosmoline, ʒi.   M.

Bougies made of absorbent cotton, saturated with the above ointment, are introduced into the nasal passage as far as necessary at bedtime, and left there till morning, when they may be expelled by blowing the nose. This is repeated every evening for a week or ten days, when the most obstinate catarrh will yield. Before introducing the cotton tent the nares should be washed out with a weak tepid solution of common salt, introduced by means of the posterior nasal douche.—*Med. and Surg. Reporter.* 19th March, 1881.

Anti-Catarrhal Remedies.—What is known as a cold, says M. N. G. de Mussy, is simply an erythema of the upper part of the air passages, accompanied by enlargement of the follicles of the pharynx and adjoining parts. In these circumstances tar undoubtedly renders good service; he discourages the use of the well known tar capsules, which are a patent medicine, and prefers to replace them by a magistral formula such as the following :—

Purified Tar, . . .	10 ctgr.
Dover's Powder (French),	15 „
Powdered Benzoin, . .	q. s. (5 ctgr.)

These pills should be rolled in chalk or trisnitrate of bismuth. The benzoin here used not only goes well with the tar, but is itself a remedy of value, especially in the obstinate nocturnal cough of patients suffering from urticaria, in which cases the "cold" is due simply to an internal urticaria. The author gives it in pastilles, of which 8 to 10 may be taken in the twenty-four hours, with half-an-hour interval between each. These pastilles are made after the following formula :—

Chlorate of Potash, . .	10 ctgr.
Saturated Tinct. of Benzoin,	10 „
Tinct. of Aconite Root, .	5 „
Gum Tragacanth and Sugar,	q. s.

The throat should be at the same gargled with a solution of borax, while revulsives are applied to the chest. If the mucous membrane remain congested and the cough frequent, while there is in the throat a sensation of tickling, the parts may be painted with laudanum, or with this solution—

Muriate of Morphia,	20 ctgr.
Borax, . . .	2 grammes.
Glycerine, . .	20 „

Or the following powder may be snuffed up into the nostrils 8 or 10 times a day :—

Muriate of Morphia, . .	10 ctgr.
Belladonna Root in Powder,	1 gramme.
Powdered Gum Arabic,. .	11 „

—*Bull. et Mém. de la Soc. de Thérap.* 28th February, 1881.

New Remedy for Constipation.—The *semina lini* and *semina sinapis* have been recommended as laxatives by Trousseau. M. de Mussy here mentions *psyllium grains*, the seeds of *plantago psyllium*, as a better remedy of the same

kind. These seeds are very small and mucilaginous, and generally very effective, though in some cases they are apt to lose their power in time. A tablespoonful should be taken in a small glassful of water before dinner.—*Ibidem.*

Is Syphilis, acquired by a Mother during Pregnancy, communicated to the Child in Utero?—Dr. Vajda answers this question in the affirmative (*Wiener Med. Wochenschr.*), and gives a case in which the patient was infected with syphilis in the seventh month of pregnancy. The child was born at full time, and remained well for seven weeks, when ozæna, psoriasis, pustules, and other signs of syphilis showed themselves. The author states that special precautions were taken to prevent infection of the child after birth, but does not show how this is possible while the mother had numerous mucous papules in the mouth.—*Cbl. f. d. Med. Wiss.* No. 2, 1881.

Healthy Mothers bearing Syphilitic Children.—W. Orth (Heidelberg) relates, in his inaugural dissertation for 1880, three cases from the clinique of Prof. v. Dusch, in which mothers bore syphilitic children without themselves showing any evidence of the disease, though they were under observation for years and were carefully examined. In all cases the fathers were syphilitic.

Case 1.—Before marriage the woman had borne a healthy child; in 1871 she married, and in 1872 and again in 1873 aborted in the fourth month; in 1874 she bore a dead, partially decomposed child, in the eighth month; in 1875 she bore a child at full term, but dead (the result, she thought, of an injury); in 1876 she bore a child, which was apparently healthy at birth, but in six weeks developed a syphilitic eruption, and afterwards condylomata. A child born in August, 1880, was still apparently healthy at five weeks of age.

Case 2.—The woman aborted at the sixth month in 1875; in 1876 she bore a child at the full term, but the child developed syphilitic pemphigus in forty-eight hours, and died in six days; in 1877 she bore a child at full term, and this child also developed blebs in forty-eight hours, and condylomata later; in 1880 she bore a child, which at the age of three weeks sickened with similar symptoms, and died of visceral syphilis in five weeks.

Case 3.—The woman bore first a dead child at full term; her second pregnancy ended in abortion at the third month; a

child born in 1873 developed skin eruption and condylomata at an early period ; a fourth, born in 1875, presented the same symptoms.

Orth holds that these cases prove (1) the possibility of immunity of the mother, even with declared or latent lues of the father and hereditary lues of the child ; (2) diminution of the intensity of the infection in time ; (3) the possibility of the child surviving even after showing symptoms of disease in the first week or month.—*Centralbl. f. Chir.* 29th January, 1881.—D. M'P.

Treatment of Diphtheria.—Dr. E. Burd states in *Med. and Surg. Reporter,* 20th November, 1880, that in the treatment of diphtheria no drug equals hyposulphite of soda. His plan of administration is as follows :—

> ℞. Sodæ Hyposulphitis, gr. 160.
> Quin. Sulphatis, gr. xxx.
> Spt. Frumenti, ʒiv.   M.
> Sig. One teaspoonful every four hours, day and night. For a child five years of age.
> ℞. Potas. Chloratis, ʒii.
> Tr. Fer. Perchlor, ʒii.
> Syr. Simplicis, ʒiv.   M.
> Sig. A teaspoonful every 4 hours, day and night.

Insufflations of sulphur to be used several times a day. Food to be taken in as large quantities as can be digested. Dr. Burd says that the results of this treatment are surprising. The spread of the exudation is arrested, prostration is warded off, fœtor of the breath disappears, and in a few days the patient is well. He has treated eight cases of true diphtheria in this way, and they all recovered.

In *Le Progrès Médical* for 8th May, 1880, Dr. Cornilleau recommends oxalic acid, a remedy which was suggested to him by the analysis of a "grand cure," which a woman was employing in his neighbourhood with excellent results. His formula is—Pure oxalic acid, 1·50 grammes; infusion of green tea, 120 grammes; syrup of bitter orange peel, 30 grammes. A dessert-spoonful to be taken every three hours. Under this treatment marked improvement is usually noticeable on the third day. By these means the author had successfully treated 17 out of 18 cases.

Treatment of Hydrophobia.—At a recent meeting of the Therapeutical Society of Paris, M. Dujardin-Beaumetz made some remarks worth noting on the treatment of hydrophobia.

Pelletiérine in his hands, as in those of M. Potain, seemed to have little or no influence on the disease. Curare had given no better results. Morphia hypodermically lessened the severity of the symptoms, and chloral seemed to act similarly. With regard to *waldivine* (a crystalline principle obtained from *simaba waldivia*), M. D. made some interesting statements. He is at present treating a man with it as a preventive, injecting 2 mgr. night and morning hypodermically; the patient was bitten some time ago by a mad dog, and the wound was not cauterised for four days. Waldivine has the curious property of completely preventing the paroxysms so characteristic of rabies. Nine dogs, the subjects of rabies, were treated with this drug by M. Nocard, and in all of them the result was the same. The dogs all died, but they had no spasmodic seizures; they rested tranquilly curled up at the bottom of their cage, quite insensible to what was taking place around them, responding to no stimuli; they had lost the appearance of wild excitement, uttered no sound, and took no food or water. The drug has thus a powerfully sedative action, and is worthy of further study; the usual congestive lesions found after death were not nearly so marked in those animals treated with waldivine.

In view of the failure of ordinary curative treatment, the prophylaxis becomes of great importance: applying a ligature above the part and causing the wound to bleed freely, and bathing it till it can be cauterised; sucking the part is dangerous, as the slightest abrasion in the mouth would lead to absorption of the virus; cauterisation should be thorough, the best agent being the hot iron.—*Bull. et Mém. de la Soc. de Thérap.* 30th March, 1881.

Delicate Test for Poisons.—M. J. Rossbach calls attention, in the *Berliner Klinische Wochenschrift*, No. 46, 1880, to the remarkable susceptibility of small animals like frogs, mice, &c., to the effect of poisonous alkaloids and glucosides; traces of the poisons so minute as to be beyond the power of chemical tests to discover, may thus be detected. For example, ·00005 of a gram of strychnine causes tetanus and death of frogs and mice (Falck, Jr.). ·0001 gr. of atropine (Gräfe) or ·0000005 gr. (Ruiter) will dilate the pupil in man and other mammals. ·0002 of a gm. of veratrine produces prolongation of the muscular curves of frogs (Bezold). ·0001 of a gram of digitoxine, or ·00005 gr. of antiarine causes systolic stoppage of the heart (Schmiedeberg). ·000005 of a gram of curarine paralyses

the ends of the motor nerves in frogs (Preyer). ·0001 of a gram of muscarine causes diastolic stoppage of the heart.

These tests would appear sufficiently minute, but Professor Rossbach suggests others still more delicate. A drop of water containing infusoria having been placed on a microscope slide, without being covered, is brought under the objective, and, while the infusoria are carefully watched, the minutest possible drop of the solution suspected to contain poison is allowed to touch the edge of the fluid on the glass. If organic poisons such as those above mentioned are present, the infusoria undergo a lightning-like destruction of their molecular tissues, and become a formless sediment.

For example, a solution of 1 part of strychnine in 15,000 produces intense enlargement of the contractile sac and swelling of the body. If a drop of water containing infusoria, and weighing ·001 gram be used as a test, the quantity of poison required to produce this effect will be ·00000006 gm. A similar effect is caused by a solution of veratrine—1 in 8,000; the weight of alkaloid which can be detected bring ·00000022 gm. Atropine influences infusoria only when 1 part is present in 1,000 of water, but even then $\frac{1}{1000000}$ of a gram ($\frac{15}{1000000}$ of a grain) of the alkaloid can be detected. Acids and caustic alkalies act only in solutions of 1 in 400 or 600. The author says, in illustration, that, if the stomach of a person poisoned by strychnine contains a *litre* of fluid, and only ·05 gram ($\frac{3}{4}$ of a grain) of the alkaloid, a single drop of the fluid will contain forty times as much strychnine as is needed for this test.— *New Remedies.* February, 1881.

A New Exhilarant Mixture.—Professor Luton has accidentally discovered that a mixture of tincture of ergot and phosphate of soda produces exhilarating effects not unlike those of laughing gas. This combination was first given to a woman of 62, under treatment for subacute arthritis; in about three quarters of an hour she showed great elation of spirit, laughed inordinately, and without cause, and seemed in a condition almost bordering on intoxication; for a considerable time after the outbursts of laughter had ceased the patient continued in a very happy frame of mind. The mixture was then tried in three other cases, and in these it produced precisely similar effects. Men are less susceptible than women to the action of this mixture; it produced in them only slight flushing of the face, vertigo, and headache; but one man of 72 stumbled as if drunk, even 24 hours after taking a dose. M. L. accounts for this difference in its action on the sexes on

the ground that while women are generally of a more nervous temperament than men, the latter are more accustomed to alcoholic stimulants, and that they therefore probably only needed a larger dose to show the symptoms observed in women. The intoxication produced resembled that due to indulgence in light wines, particularly champagne; it recalled to mind also the stimulant action of small doses of opium, that of chloroform in its first stage, and above all, that of cannabis Indica. It is well known that ergot exercises considerable influence on the cerebral centres, and that in wet seasons, when rye bread contains more than 5 per cent of ergot, it causes not only convulsions, but also a kind of intoxication, to which the peasants are not at all averse. The exact formula for a dose of the mixture is—

Tincture of Ergot, ... 5 grammes.
Solution of Phosphate of Soda (10 per cent), 15 ,,
To be taken on an empty stomach, in a little sweetened water.

The author suggests that this mixture may prove useful in cases of hypochondria and melancholia, and the cold stage of fevers and cholera, and that it may be given to combat the depression associated with anæmia and chlorosis.—*Bull. Gén. de Thérap.* 30th March, 1881.

On the Local Origin of Cancer.—In a recent number of the *Medical Times and Gazette,* there is a paper by Jonathan Hutchinson on the "Local Origin of Cancer," read by him twenty years ago, before the Hunterian Society. Among the facts that seem to favour the view that the disease is of local origin, he cites the following:—

1. That some forms of cancer continue throughout their course purely local disorders; *e. g.,* rodent ulcer.

2. That some forms of cancer which do become constitutional are most certainly local at first; *e. g.,* chimney sweep's cancer, epithelioma of lip, &c.

A strong argument in favour of this view is, that when it commences in a part which can be watched, it may be seen that the first effects of irritation are not the production of a cancer, but simply of an irritable sore or warty induration. On the lip and on the scrotum all gradations may be observed between indurated and inflamed tubercles containing no positive elements of cancer, and the genuine epithelioma. Negative facts in favour of the local origin of cancer are—that it almost always begins as a solitary growth; that it is almost never symmetrical; that it commences in persons in perfect

health, generally in exposed parts; that it almost never affects the lymphatic glands primarily; and that the hereditary tendency to it is comparatively rare and capricious.

The great arguments in support of the constitutional origin of cancer are its occurrence as a primary disease in internal and protected organs; its being sometimes hereditary; the want of success which so often attends operations for its removal; and its not very unfrequently assuming a multiple form, and occurring in many different places at the same time. But even in such cases—for instance in cancer of the liver, we do not know what form the disease assumed in its very earliest stage; and it is but fair to infer of cancer in hidden localities that which we know is its course in those parts which can be seen and touched.

The following circumstances ought always to be deemed suspicious as to the existence of a general taint :—

1st. When the disease is symmetrical.

2nd. When the patient is young. Such cases are generally hereditary.

3rd. When the growth is unusually rapid in its development.

4th. When there is no history either of injury or of source of irritation.

If the view be adopted (and Mr. Hutchinson favours it) that cancer, when it begins *de novo* in an individual—*i. e.*, not hereditarily, is a local disease which tends to become constitutional by the absorption of its fluid elements through the lymphatic system, and thence into the blood, the following rules as to its treatment follow as a matter of course :—

1st. Primary cancers ought, whenever accessible, to be excised, or otherwise freely and promptly destroyed.

2nd. All operations for removal ought to be done without any avoidable delay.

3rd. If the lymphatic glands are in the least enlarged, the entire cluster ought to be removed.

4th. If the disease return either in or near the cicatrix, or in the proximal lymphatics, it ought still to be regarded as probably local, and a second free incision promptly undertaken.

5th. After an operation, the patient ought to be informed of the probability that the glands may enlarge, and impressed with the absolute necessity of immediate recourse to the surgeon should such be the case.

6th. Cicatrices should be kept free from tension, by transplantation of integument or otherwise.

7th. Removal of cancers by escharotics ought to be avoided, as it wastes time, and increases the risk of contamination.—*Med. Times and Gazette,* 22nd Jan., 1881.—G. S. M.

Milk Diet in the Treatment of Diarrhœa and Chronic Dysentery.—Dr. E. Mansel advocates strongly the adoption of an exclusively milk diet as the most satisfactory method of treatment in diarrhœa and chronic dysentery, whatever may be their origin. Treatment should be begun by repeated purgation; then the patient should be put under the milk regimen, the quantity given varying from $1\frac{1}{2}$ to 3 litres per day. Only when the patient has had one formed motion several days in succession may he be permitted to add anything else to his diet. Under this treatment the affections named improve slowly but surely, patients gain weight, the urine increases in quantity, while the liver regains its normal volume. —*Bull. Gén. de Thérap.* 15th March, 1881.

The Antiseptic Catgut Ligature.—Dr. Lewis A. Stimson in an able communication compares the results obtained from the use of the catgut ligature with those from the silk ligature, and gives the preference to the former in point of actual safety, as shown by statistics of the two when employed in similar operations. It is held that an examination of the vessels after using the catgut ligature shows that it does, as a rule, divide the artery completely, that it occasions much less irritation than the ordinary thread, that it may become encysted and absorbed, or it may exceptionally be cast off by ulceration, but even in this case it occasions less local reaction than the silk cord. The fears of the softening of the ligature prematurely are shown not to be founded on fact, and subsequent swelling may be obviated by placing the ligatures in carbolised water before the operation. Finally, a preference is expressed for applying the antiseptic catgut ligature in a single cord, around the artery, with sufficient force to divide the inner and middle coats because it is more certain to accomplish the object of the operation, and because the danger of secondary hæmorrhage, sought to be avoided by leaving the coats unbroken, does not appear to be sufficiently great to make it worth while to incur the risk of failure to accomplish the principal object of the operation, that is involved in the proposed modification.—*American Journal* of the *Medical Sciences* for January, 1881.

The Treatment of Biliary Calculi.—Dr. Bouchardat states that bread, meal, nitrogenous foods in excess, sorrel,

tomatoes, heady liquors, fish, shell-fish, and decayed cheese must be abstained from, in the case of persons suffering from biliary calculi. Bread is to be replaced by potatoes; the common vegetables may be eaten, bearing in mind that those containing much potash are preferable to those which have an excess of soda. An alkaline course of treatment may be indirectly prescribed by ordering the malates and citrates which are found in fruits; oily fruits in moderation, and light red wines diluted with water are also to be recommended; (2) in the morning before breakfast a tea or tablespoonful of the tartrate of potash and sulphate of soda, equal parts, should be taken in a glassful of sweetened lemonade; (3) moderate exercise; (4) the functions of the skin should be stimulated by washing, repeated rubbings, and shampooing with the hand moistened with a few drops of perfumed oil. One to three baths should be taken every week, each bath containing—

> Carbonate of Potash, 100 grams,
> Essence of Lavender, 2 grams,
> Tincture of Benzoin (vanilla), 5 grams,

followed by prolonged rubbings and shampooing; (5) for facilitating the expulsion of the calculi, 1–3 *perles* of the essence of turpentine and 1–2 *perles* of ether should be taken morning and evening, either at or preferably between meals. To prevent the formation of gall-stones, a pill containing 0·1 decigram of tartrate of potash and lithia should be taken for ten days, morning and evening, before meals; and for ten days more a dessert-spoonful of a mixture containing the syrup of aperient raisins 400 grams, and acetate of potash 20 grams. For ten days longer a litre of water daily, holding 10 grams of tartrate of potash and soda in solution. In spring, 120 grams of the juice of lettuce, chicory, and dandelion in equal parts, together with 5 grams of acetate of potash, daily on rising, for a month. A season at Pongues, Vals, or Vichy. —(*Le Progrés Médical.* 11th December, 1880.) *The Practitioner.* April, 1881.

Large Aortic Aneurism Treated Successfully by Electro-Puncture.—Professor F. Verardini records another striking case of this kind (*Bull. delle Scienze Med.*), the patient being a man of 78. The operation seems to have been performed after the method of Ciniselli. At the first *séance* a current of too great intensity was used, which gave rise to so much pain that the operation had to be given up at the time.

Subsequently, a weaker pile, of eight elements, was prepared, and this was borne well. The current was passed for periods varying from fifteen to forty minutes, and was reversed every eight minutes. There were six sittings in all. The result was complete success, the patient being presented at a meeting of the Medico-Chirurgical Society of Bologna.—*Bull. Gén. de Thérap.* 30th January, 1880.

Modification of Sayre's Jacket for Posterior Spinal Curvature in the Middle and Upper Dorsal Regions.— Dr. Gehrung, in cases of disease high up in the dorsal region, has applied, with success, the plaster of Paris jacket in such a way as completely to prevent the movements of ribs, scapulæ, and clavicles, at the same time removing the superincumbent weight of the upper extremities, shoulders, head, and neck. The patient being suspended and provided with a thin, tightly fitting undershirt, to which rolls of cotton or folded cloth are stitched on either side of the curvature, " the bandage is applied first by a few circular turns around the chest, sufficiently tight to prevent the respiratory movements of the ribs ; then obliquely across the shoulders so as to immobilize the clavicles and scapulæ. This is continued by means of an occasional reverse of the roller until the entire chest is covered, reaching down behind to the twelfth dorsal vertebra, from thence along the lower border of the ribs and costal cartilages to the inferior extremity of the sternum, and above from the vertebra prominens, along both sides of the neck to the upper border of the sternum in front, thus covering the thorax completely as by a shell. Respiration is henceforth altogether abdominal." He states its advantages as follows :—

" 1. Its useful action begins when that of Sayre's jacket, without the addition of a jury mast, becomes doubtful or ceases.

" 2. It makes an absolute splint for the whole chest, and consequently enhances the rapidity of the cure.

" 3. All the natural motions of the body (except those of the thorax) are free and undisturbed, to the great comfort of the patient and benefit of his general health.

" 4. It is less cumbersome and weighty than the jacket alone, and still less so than when a support for the head is added."

He adds that the feasibility of this immobilisation of the chest being once recognised, the jacket may find more extended application, *e. g.*, in fractures or dislocations of the clavicles, scapulæ, ribs, and vertebræ.—*St. Louis Courier of Medicine.* December, 1880.—G. S. M.

FIG. I.
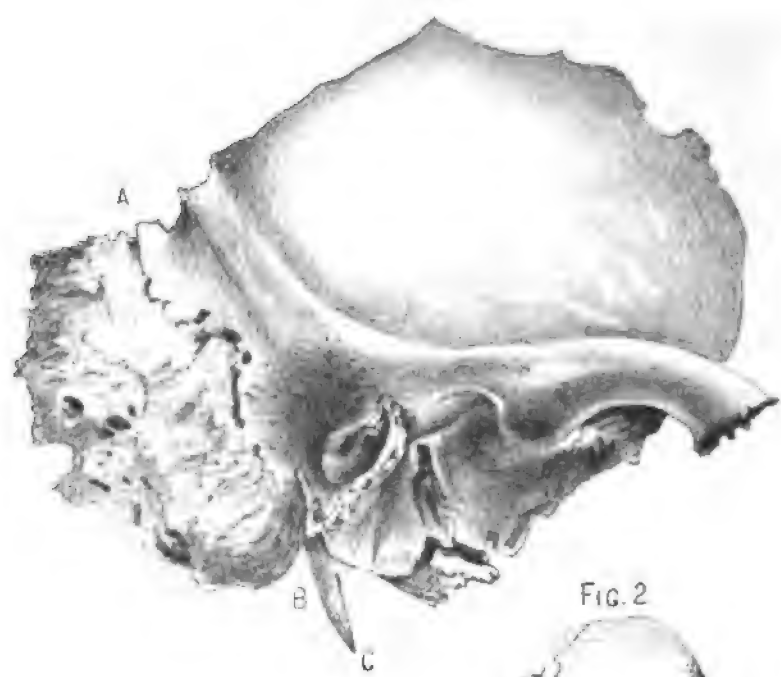
FIG. 2
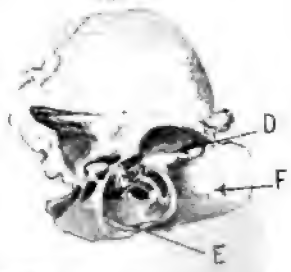
FIG. 3
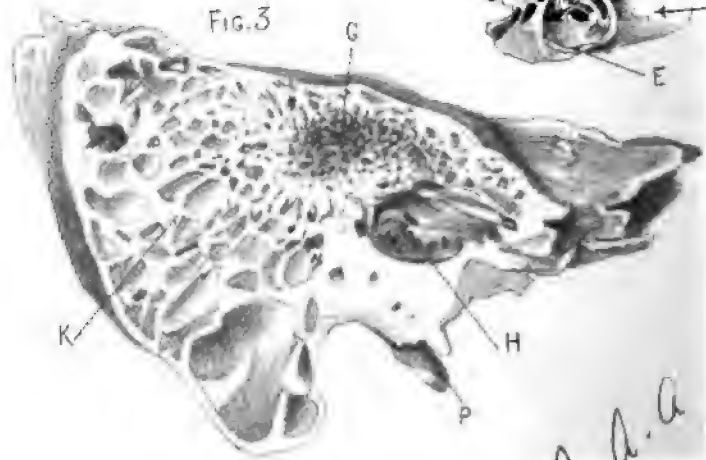
ORIGINAL ARTICLES.

ON CERTAIN ANATOMICAL RELATIONS BETWEEN ABSCESS OF BRAIN AND AURAL DISEASE.

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(*With Lithographic Drawings.*)

THERE is no part of the human body which, in proportion to its size and its relation to other parts, presents so many important points for the consideration of the medical man as the organ of hearing. Nor is there another department of medical science which promises larger returns for the labours of the pathological and scientific surgeon. And yet, until a comparatively recent time there was scarcely another branch of surgery in the profitable cultivation of which there was so little of real progress. The late Professor Syme, I am told, when lecturing on diseases of the ear, used to divide them into two classes—the "incurable," which he said were treated by the aurists, and the "curable," which were treated by the surgeon. And this was said at a time, forty years ago, when beyond the extraction from the external meatus of a polypus, or an accidentally imbedded pea, or of some hardened wax, or the puncture of the membrana tympani, or the catheterisation of the Eustachian tube, there was little that the surgeon could advance as a creditable set off against the pretentious placebas of drops, lotions, ear trumpets, and other paraphernalia of the aurist of that day.

But of late, and especially at the present time, so great is the diligence shown by painstaking and able observers, that the general practitioner regards with no feeling of jealousy or desire of depreciation, the more equal platform from which his co-labourer, the specialist aural surgeon, now deals with a class of ailments that affect so largely the health, comforts, and material interests of the community.

It is in this spirit of sympathetic association that I now submit some observations relative to abscess of the brain, associated with disease of the ear, the pathology of which has not, in my opinion, been as yet sufficiently recognised.

It was long a popular belief that "a running from the ear" was rather a healthy affection than otherwise, and even in the ranks of the profession there may still be found individuals who, although not prepared to contend that otorrhœa is actually beneficial, nevertheless do not regard it as worthy of, or necessarily requiring earnest treatment. But it is substantially a disease, or rather the indication of disease. For the structure and functions of the middle and internal ear are always seriously affected when purulent discharges are of long continuance. Such discharges are, therefore, no longer to be regarded as at the worst simply an unpleasant secretion, a mere troublesome affection having no other result. They are properly to be considered as symptomatic of one, or it may be, of several conditions, and the purulent matter itself is further to be looked upon as certainly provocative of a great extension of the original lesion if neglected. "As long as discharge from the ear is present," says Wilde, "we can never know how, when, or where it may terminate, or to what it may lead."

The greater number of diseases of the ear, and nearly all which are characterised by suppurative discharge, involve the walls of the tympanic cavity. Kramer states that 56 per cent of all aural diseases are situated in the middle ear. And when it is borne in mind that there are only barriers of thin bone between the middle ear, the internal carotid artery, the internal jugular vein, the lateral sinus, the internal ear, &c., and these barriers are sometimes deficient or imperfect, it is matter of surprise that the extension of diseased action from the ear to the brain is not of still more frequent occurrence than has yet been shown. But although the conservative processes that defend the delicate brain tissues from invasion are powerful, there is accumulating evidence of diseased condition of brain, originating more frequently than is commonly supposed from disease of the ear. And of these, abscess of the brain, the result of neglected discharges from the ear, is very frequent.

So far, therefore, the practical importance of "a running" from the ear is evident. But the *rationale* of the pathological processes involved is, in certain conditions, somewhat obscure.

Dr. Barr, Lecturer on Aural Surgery in Anderson's College, of whose special ability I have on several occasions had personal knowledge, read a communication to the Glasgow Medico-Chirurgical Society, in April 1880, in which he said— "There may be readily developed out of the diseased condition of the ear morbid changes in the walls of the vessels, which, by passing along to the dura mater, may set up inflammation of that membrane, or to the sinuses, may excite phlebitis, with the attendant danger of the formation of thrombi and purulent deposition in other organs. . . . After the dura mater is involved, the inflammatory condition probably passes to the brain *by contiguity of tissue*, as there is no direct vascular or lymphatic connection between the dura mater and the substance of the brain. How is the great fetor of the pus in the brain to be accounted for? How do the bacteria get admission to the purulent matter when there is no actual opening in the dura mater or bone, and *no direct vascular connection?* These are questions regarding which I would gladly hear the views of any member of the Society, and especially of Dr. Coats or Dr. Foulis; also, how the *extension from the middle ear of the suppurative process takes place when a portion of healthy brain tissue intervenes between the dura mater and the abscess?*"

From frequent observations in the Anatomical Rooms, I had hitherto held the belief that in certain conditions there was a direct vascular connection between the venous blood from the ear and the substance of the brain, but as Dr. Barr's statement passed unchallenged by the well informed gentlemen who were present, I shrank from expressing at the moment the contrary conviction I held. Subsequent reflection and further special investigation have, however, satisfied me that there is a fair solution of the problem.

That my argument may be clearly followed, I propose to show—1. That aural diseases are more frequent in the early than in the later stages of life, and that suppurative discharges from the ear follow the same law. 2. That, contrary to what might be expected, and to what is currently believed, abscess or suppuration in the brain, whether encysted or diffuse, is much more frequent in advanced life than in early age. 3. That there are anatomical peculiarities of structure in the organ of hearing which differ in the infant and in the adult, which explain the greater frequency of abscess of the brain

in adult life as originating from disease of the ear. 4. That under certain conditions there is an abnormal state of the cerebral circulation which admits of a direct vascular connection between the ear and the brain.

Dr. Kramer, * in an elaborate analysis of 2,000 cases of aural disease, states that 504 occurred in the first ten years of life, or about 25 per cent of the whole number. And Dr. Wilde † gives a very comprehensive statistical table of 2,385 cases of diseases of the ear of every kind registered at St. Mark's Hospital, Dublin, of which 411, or nearly 18 per cent, were under ten years of age.

Substantially, therefore, the experience of both these eminent aurists is in accord as to the large proportion of cases which occur in early life. And what is true of aural disease in general is still more markedly evident in those that are characterised by suppurative discharges uncomplicated with caries, or growths or injuries.

Of the 2,385 cases registered by Dr. Wilde of diseases of the ear of every kind, there were 528, or 22 per cent, described as otorrhœa pure and simple, and of these, above 41 per cent occurred under ten years of age. Between the ages of eleven and twenty there occurred above 31 per cent, thus making 72 per cent of cases of otorrhœa under twenty years of age out of the entire number of cases of that disease at all ages.

Although cases of inflammation of the external auditory canal—not including eczema—are sufficiently frequent, yet actual suppuration of that region is a rare disease. When chronic suppurative discharge issues from the ear, it will, as a rule, be found to have its origin behind, and not in front of the membrana tympani. Dr. Roosa (*Op. Cit.*, p. 365), when showing the comparative infrequency of suppurative affections of the outer ear as contrasted with those of the middle ear, notes, that of 2,271 cases of inflammation with suppuration of the external and middle ear, observed in certain specified hospitals in New York, there were 1,769 cases wherein the suppuration proceeded exclusively from the middle ear. And, in a more exact reference to cases occurring in private practice, he states that of 1,000 cases of the different varieties of aural disease observed by himself, only 132 were cases of affections of the outer ear. There can, therefore, be no question of the great prevalence of otorrhœa at all periods of life, but particularly so in early life.

But my second proposition, that abscess or suppuration in

* Resumé in *B. & F. M. Rev.*, 1847.
† *Aural Surgery*, 1853. P. 102.

the brain is comparatively rare at the early ages, is not in accord with current opinion. So far as I can gather from my contemporaries, and from general medical literature, this statement is much opposed to the common belief. And, in consideration of the greater frequency of suppurative discharges from the ear in early life, the fact is, on first sight, remarkable and unexpected ; and yet the evidence is very clear.

Lebert * has carefully analysed the histories of 80 cases of abscess of brain from all causes, one-fourth of which were the outcome of caries of the petrous portion of the temporal bone. And though his investigations show that abscess of the brain may occur at all ages, he has noted, as a general result, that the most frequent period is between the sixteenth and thirtieth year, But this general fact, although of great significance, is not sufficiently definite to establish my proposition. I have, accordingly, constructed a table of 105 cases, consisting of a digest of 76 cases compiled by Drs. Gull and Sutton, and published in Reynold's *System of Medicine*, vol. ii, p. 581, and of 29 cases additional given on the authority of twenty-five observers, and collected by myself from scattered publications in general medical literature, chiefly within the last ten or twelve years. I have classified these cases under four divisions, with as much carefulness as the published details admit ; and I consider that the table is fairly representative, not only of the relative frequency of abscess of the brain from all causes within the periods of life specified, but that it is also fairly illustrative of the special causes which originate suppurative deposits within the brain.

CAUSES OF ABSCESS OF BRAIN.	TOTAL.	AGES.			
		Under 10.	11 to 20.	Above 20.	Not Stated.
Disease of Ear with Caries of Bones,	24	2	8	14	...
Suppuration from Ear. Caries, if present, not stated, . . .	20	2	6	11	1
Injuries of Head, ...	20	1	6	11	2
Disease in other parts of Body, . .	41	...	4	31	6
	105	5	24	67	9

* *Virchow's Archiv*, Band x, p. 391.

This table shows that there must be conservative conditions protecting the brain in early life. Less than 5 per cent of the cases occurred in childhood, and above 72 per cent occurred in adult life. This non-liability to abscess of brain, from whatever cause, is still more evident in the following table, consisting of cases wherein the suppurative deposits either originated exclusively from, or were directly associated with, disease of the ear. This table is constructed of the 44 cases comprised in the preceding table, together with 30 cases collected from various sources by Dr. Roosa, and of 6 cases recorded by Toynbee, and are irrespective of those included in Dr. Gull's synoptic list, but part of which is taken from Dr. Toynbee's classical treatise.

CAUSES OF ABSCESS OF BRAIN.	TOTAL.	AGES.			
		Under 10.	11 to 20.	Above 20.	Not Stated.
Caries or Necrosis of Temporal Bone,	46	6	13	26	1
Suppuration of Ear. Caries, if observed, not stated.	34	3	7	23	1
	80	9	20	49	2

Here it is seen that only 9 cases, or 11 per cent, occurred in childhood, and above 63 per cent in adult life. And if to this table there is added cases of injuries of head, the conclusion remains substantially unchanged to the effect that whatever the originating cause may be, and even where the originating causes are restricted exclusively to diseases of the ear and injuries of the head, it remains abundantly evident that abscess of brain in childhood is rare when compared with its frequency at other periods of life.

I may note here that as to these cases in the preceding tables, wherein the ages are " not stated," I would feel warranted from the context of their records in assuming that they were adults; but whether so included, or entirely set aside, the estimate I have drawn is not substantially impugned.

Whatever the age, there is abundant evidence that diseases of the ear originate a large proportion of cases of abscess of the brain. The proportion has been estimated at a high figure by that very careful and competent observer, von Tröltsch,* who says, " perhaps half of all cases of abscess of

* *Surgical Diseases of Ear*, p. 66, *Trans. of Syd. Soc.*, 1874.

the brain take their origin from suppurative inflammation of the ear." If I form a ratio from the table at p. 421, the proportion of cases of abscess of brain, associated with diseases of the ear, is seen to be 42 per cent, and if both tables, pp. 421 and 422, are thrown together, the proportion is 56 per cent, and these tables are therefore so far an evidence that the estimate given by von. Tröltsch is not far from the truth.

The question naturally arises, since children are more subject to aural discharges, and since aural disease is the most frequent originating cause of abscess of brain, why should children be so largely exempt from liability to abscess of brain? The explanation will be found, in a large measure as I believe, in considerations arising from a comparison of the structure of the organ of hearing in the child and in the adult, and of the changes the organ undergoes as it approaches full development.

In the child the mastoid process of the temporal bone is in a very rudimentary condition. It does not form a large projecting promontory as in the adult. In section it is comparatively homogeneous, and only minutely porous, resembling *in petto* the surface of a fine sponge. It contains few mastoid cells properly so called, excepting one large cell, the *antrum mastoideum*, continuous with a rudimentary tympanic cavity. In nearly its entire thickness the mastoid process of the child forms a barrier of bone extending backwards between the tympanic cavity and the groove on the inner wall of the temporal bone for the lateral sinus.

In the adult, on the contrary, the mastoid process is large, and projects considerably. It is hollowed out into numerous large cells, which are in communication, and are, indeed, an appendage of the tympanic cavity, with which they are continuous. The aperture of communication between the purely mastoid cells and the tympanum is much narrower in the adult than it is in the child. This important fact which, so far as I can ascertain, has not been hitherto noted, is very apparent on examination of a series of sections of young bones at different ages.

The cells occupy and completely transform that portion of the mastoid which intervenes between the tympanum and the osseous wall of the lateral sinus. The mastoid cells are not *entirely* formed, by invasion backwards, of cells which are in communication with the antrum. The whole mastoid process gradually becomes converted into cells which inter-communicate and ultimately lead into the antrum at its posterior wall.

There is, therefore, in the adult only a thin screen between

the large cells of the mastoid and the lateral sinus. Not unfrequently there is no osseous barrier ; for I have, in several instances, found the lining membrane of the mastoid cells in direct contact with the dura mater.

In the child, the outer surface of the temporal bone, where the squamous unites with the mastoid portion, the line of junction is only partially ossified, and often so defective as to permit a readily formed opening through which, at times, is spontaneously discharged the purulent contents of the tympanum and antrum.

But in the adult this suture is completely ossified, and the outer layer of bone, instead of being weakened by the development of the mastoid cells, is on the contrary strengthened by the attachment of the powerful muscles which, by their strain, induce a stimulated nutrition and consequent thickened cortex to the bone. Near the meatus, where no muscles are attached, the bony cortex is thinner, and the mastoid cells are nearer to the surface, a fact not to be lost sight of when that useful operation of trephining into the mastoid cells or into the tympanum is desirable or necessary.

In the adult there is not unfrequently only a thin lamina of bone forming the roof of the tympanic cavity (the *tegmen tympani*); and in some instances, although rarely as I believe, it is altogether deficient. According to Toynbee and certain other aural authorities, this defective condition or complete absence of the *tegmen tympani* has been seen so frequently as to constitute fully 5 per cent of cases. But I am well satisfied that this percentage can only be derived from an examination of temporal bones in which disease has more or less existed. For, to satisfy myself on this point, I have made a very careful examination of above one hundred healthy crania, and in no one instance did there exist such deficiency. I have therefore no doubt whatever that in the majority of cases where the *tegmen tympani* is found deficient it was more or less a consequence of a previously diseased condition that has induced atrophy and absorption. The alleged greater frequency of caries of the *tegmen tympani* than of other portions of the temporal bone, if such does actually occur, must be due to other causes than actual deficiency of the bony roof.

The tympanic cavity, together with the mastoid cells, which may be considered analogous with the cells and sinuses of the organ of smell, is lined with a delicate fibro-mucous membrane, which to other uses adds that of a periosteum in nourishing the structure of the bone. The large surface presented by this membrane explains the profuseness of discharge which charac-

terises " a running ear," while the number of cavities and the complexity of the communications explains the difficulty and occasional impracticability of efficient topical treatment, especially in the adult, because of the more extensive and more complicated surface presented. And hence the advantage of early attention to cases of running ears, and hence also the increasing gravity of the prognosis as the disease becomes more and more chronic, because there is an increasing probability of diseased action having extended from the tympanum into the mastoid cells or into the sinuses, and this probability becomes all the greater in the adult because of the comparative feeble vitality of the thin laminae of bone which screen the cerebral cavity from the inner surface of the temporal bone. But this liability to the extension of diseased action in the direction of the brain cavity is not so great in the child, where a comparatively limited surface only is presented by the partially undeveloped tympanic cavity and single mastoidean cell, and where the thick barrier of bone between the tympanum and the interior of the skull is at the most active stage of growth and of reparative power. The differences which exist between the organ of hearing in the child and in the adult extend to every part of the structure, and exercise an influence that modifies all the pathological conditions that can arise. Thus, the dura mater, which in the child is closely adherent to the temporal bone, and also to the wall of the lateral sulcus, becomes in after life lax in its connection with the bone, and contributes little nutriment through such connection as exists. That nutriment in the adult is furnished substantially by the vessels of the fibro-mucous membrane that lines the mastoid cells of the interior. Therefore, when suppuration occurring in the tympanum of the adult extends into the antrum and other mastoid cells, this lining membrane, in its depraved state of nutrition, and subject to pressure by an accumulating diseased secretion, becomes incapable of supporting the healthy vitality of the thin lamina of bone that forms the walls of the mastoid cells where they abut upon the lateral sinus, or where they form the roof of the tympanic cavity. Caries or necrosis is a frequent result. But when suppuration occurs in the tympanum of the child, the diseased action is hindered from extending backwards and inwards by a barrier of thick well nourished bone ; and, therefore, it is rare in the child that such suppurative action penetrates the lateral sulcus or the lateral sinus. And in a degree greater than in the adult it is also hindered from penetrating through the tympanic roof.

The tendency of the suppurative flow is nearly altogether

outwards in the child, because the purulent matter finds less hindrance and a readier vent to the external surface through the thin and frequently imperfect suture that forms the junction of the squamous with the mastoid process of the temporal bone behind and close to the meatus. Hence the greater frequency of caries of the mastoid bone behind the ear which is observed in the child. In this connection I note that, notwithstanding the frequency of caries of the mastoid process, and the important benefits that unquestionably have resulted, and may further be expected from surgical operation upon this part, the most recent text books on Surgery either omit all reference to caries of the mastoid, or make the barest allusion to it as if it were a disease of rare occurrence.

As to the mode in which disease progresses from the ear to the brain, the general opinion seems to be that the temporal bone becomes carious, and, as a consequence, the dura mater ulcerates, and the arachnoid pia mater, and ultimately the substance of the brain, participates in the disease as the result of direct extension from the ear, or by contiguity of tissue as conjecturally explained by Dr. Barr. And when purulent matter has actually exuded from the mastoid cells through the osseous walls of the lateral sulcus, or has penetrated upwards and laid bare the roof of the tympanic cavity, it is easy to recognise how the ulcerative action by mere contiguity of tissues should extend and form purulent deposits in the brain. But this is not the whole case. Purulent deposits in the brain are not always the result of this diseased action. For in some instances an abscess is developed in the brain without manifest ulceration of the mucous membrane of the tympanum or cells, and without caries of the bone. No doubt, abscess of the brain, associated with diseased bones of the ear, is more frequent than where no caries or necrosis of these bones has been observed. Nevertheless, so far as my data go to illustrate this point, the difference in relative frequency is not excessive. For, of the cases of abscess of brain associated with disease of ear, given in table, p. 422, there were 34 in which no carious or necrosed state of the bone had been observed, or at least noted, although from the descriptive context, if any such diseased condition had existed, it would almost certainly have been recorded.

I do not think it necessary to pause here and enquire whether it is more probable that the suppurative action may have extended, in some of the cases, from the brain to the ear rather than from the ear to the brain. The consensus of well informed opinion is, that the diseased condition extends

from the ear to the brain, and that only in very exceptional circumstances can there be a probability of its extending *from the brain* to the ear.

These considerations lead to the question of the possible or probable conditions under which suppurative action attacks the brain in cases where the bones are not carious nor necrosed. Some observers believe that a sufficient explanation is to be found in the continual irritation produced by chronic inflammation of the mucous membrane, with want of free outlet for the accumulating depraved secretion. For, it is argued, the vessels which nourish the tympanum have, so far as is known, no direct connection with the substance of the brain, and therefore there exists no direct route along which septic matter can travel. And this is the very important problem to which Dr. Barr has directed attention. I venture, however, to affirm that under certain conditions which often exist in cases of abscess of brain associated with disease of ear, an indirect route may be established, and that a consideration of certain peculiarities in the anatomy of the brain, and its relations to its osseous envelope, furnishes a sufficient or a very probable explanation.

Hitherto I have restricted my considerations to the influence exerted upon diseased action by peculiarities in the structure or anatomical development of the osseous portion of the organ of hearing, and so far as these modify diseased action occurring in early as contrasted with adult life. I have now to speak of peculiarities in the blood circulation in the bones of the cranium and in the sinuses, and of conditions under which that circulation becomes altered and thereby furnishes a new and a direct route along which disease-producing influences may be conveyed from the ear to the brain.

When the dura mater is being separated from the surface of the brain, there are seen small fibrous bands which stretch across and connect the two surfaces near the base of the brain, and chiefly opposite the sinuses. These are veins. At two points they are larger than elsewhere, and three or four vessels are often comprised in one band. Two sets of these veins enter the lateral sinus, one from the under surface of the cerebellum, and the other from the under surface of the middle and posterior cerebral lobes. I have further observed, with unvarying frequency, one, and sometimes two veins which leave the inferior surface of the middle cerebral lobe and enter the superior petrosal sinus.

The usual flow of blood along these veins is *from* the brain

towards the ear, and, therefore, under usual conditions, they cannot carry any septic matter from the ear or against the stream. But the cerebral veins, and all the veins inside the cranium, have no valves, and, therefore, when any impediment occurs in the normal current, there takes place a reversed flow, and the blood reaches its ultimate normal destination by collateral channels and circuitous routes. What are the conditions which may cause such an impediment and such a reversed flow, and where is that obstruction most likely to occur?

In the adult, as has already been observed, the lateral sinus is in close proximity, and sometimes in immediate contact with the fibro-mucous membrane of the mastoid cells, and there are numerous small veins which pass *from the cells into the sinus*. These veins, originating in a diseased membrane, readily propagate their inflamed or diseased condition to the corresponding coats of the lateral sinus. An equally ready channel for the conveyance of septic matter contained in the tympanum or mastoid cells exists in the perivascular spaces of these mastoid veins, and along these spaces the irritating matter can travel with little hindrance until it emerges within the cranium between the fibrous coats of the lateral sinus and the osseous groove in which it rests. The pressure and irritation caused by the retained pus gives rise to more or less thickening of the walls of the sinus, to a diminution of its natural calibre, and to consequent obstruction. This irritative or inflammatory action may induce thrombi. Not only may, but frequently does induce thrombi. In detailed reports of cerebral abscess, it is very frequently noted—although without drawing the deduction to which I am leading—that the lateral sinuses contained thrombi; and I think it likely that, if attention is given to this occasional association of thrombi in the sinuses, with co-existing abscess of brain, the presence of clots in the sinuses will be more frequently recorded. But this is a point that I will elucidate at greater length subsequently. Irrespective, therefore, altogether of actual caries or of necrosis of the temporal bone, the walls of the lateral sinus are exposed to irritating influences propagated from the tympanum and mastoid cells.

Septic matter contained in those cells may enter the mastoid veins directly, and be carried into the lateral sinus. The *modus operandi*, by which blood cells pass through capillary walls from within outwards, or from without inwards, without actual breach of surface, has been sufficiently shown by

Cohnheim and others. Klebs * has shown how bacteria pass into the circulation from a surface bathed with septic matter, and has traced their penetration into the interspaces of the cellular tissue either with or without the aid of wandering lymph corpuscles—has observed their penetration through the erroded walls of a vein into the circulation, and has detected their presence in thrombi within the veins. And the experiments of Koch, in which he produced artificial traumatic infective diseases, have abundantly demonstrated that the soluble poison "sepsin," which exists in putrid blood, and also the various forms of microscopic parasitic germs, known under the names of bacteria, micrococci, zooglœa, &c., can permeate the vascular tissues and become located in the heart, lungs, liver, and other organs. He revels in description of the various modes in which the various *forms of infective germs assail the organs and tissues*. "It is quite possible," he says, "that the baccili grow into the vessels and enter the circulation through spaces in their walls, which permitted the exit of the much larger red blood corpuscles." He tells us that, after subcutaneous injection of septic matter "in the capillaries the baccili congregate," particularly at the points of division, and that "one meets everywhere with vessels containing free baccili, and with white blood corpuscles with baccili in their interior," &c. He shows that these infective microscopic organisms differ in size, form, and in most other points, and describes six out of many varieties which he believes to exist, and shows various modes in which they affect the living organism. Of one variety—pyæmic—he says, "the manner in which the *micrococci*, as it were, *spin round the blood corpuscles and enclose them*, seems to me to be quite characteristic of this particular form," and is disposed to believe that the large metastatic deposits in the liver and in the lungs do not arise by gradual growths of a mass of micrococci, but *by the arrest of large groups of micrococci and of the clots associated with them* found in the manner described in the circulating blood; in *other words, by true embolism.*" Of another variety—septicæmic organisms—he says, "*they never enclose the blood corpuscles*, even when they have accumulated in large numbers in the interior of the blood-vessels. They rather push them on one side. They do not cause coagulation of the blood, and thus emboli do not occur." And, when referring to the remarkable distinction in physiological character of the different classes of these parasitic

* *Vide* Koch on "Infective Traumatic Diseases." *Syd. Soc. Trans.*, p. 31. 1880.

microscopic germs, he says, " I scarcely know a more striking example than the case of the *bacillus* and of the chain-like *micrococcus* growing together in the cellular tissue of the ear ; the one passing into the blood and penetrating into the white blood corpuscles, the other *spreading out slowly in the tissue in the vicinity* and destroying everything round about." The observations of Koch, although in their main portions restricted to generalisations, are yet so remarkably suggestive as to be in some respects special. Thus, to my mind, they stimulate reflection and give aids in explaining why at one time an abscess in the brain associated with disease of the ear is characterised by unpleasant fetor, and that another is bland and innocuous, &c., &c.

The lateral sinus may therefore become inflamed, may receive septic matter carried from the tympanum and mastoid cells, and may become more or less occluded through various causes. At one time the obstruction is explicable on simple mechanical principles ; at another time it is based on the action of pathological stimuli. These conditions are well illustrated in a report on "Thrombosis and Embolism " by Weissner, * wherein he gives an analysis of 74 cases collected by Lanceraux. That observer distinguishes an inflammatory and a non-inflammatory form of thrombosis of the cerebral sinuses. Of the 74 cases, he alleges that 39 were of the former and 35 of the latter. But neither Virchow nor Dusch, who have treated ably of this condition, admit the distinction. . Inflammatory thrombosis of the sinuses, according to Lanceraux, is invariably connected with alterations of the scalp or bones of the head. In 39 of the cases collected by him, there were 30 in which caries existed, and 24 in which "otitis interna " was present. The sinuses adjoining the seat of mischief were always diseased, while the superior longitudinal and the symmetrical blood channels were rarely affected. Purulent meningitis or abscesses often occur, not only in the vicinity of the obstructed sinus, but also sometimes at a distance, and unconnected with it. Effusions of blood are alleged to occur only in exceptional cases, because by means of the previous inflammation collateral channels have been formed which, he states, is not the case in non-inflammatory thrombosis.

Dusch † concludes generally that coagulation of blood in the sinuses may be due to the propagation of a coagulum from the neighbouring veins in cases of caries, necrosis, and wounds of the cranium, and of extravasation of blood into the sub-

* Schmidt's *Jahr.* Vol. 117. P. 209, 1863.
† *Brit. Med. Journ.* April, 1861.

stance of the brain. Or it may be due, he says, to any cause either of a local or general nature, such as anæmia, feeble heart, or the compression of the sinuses by tumours; and to the latter cause I may add, as already adduced, to reduced calibre of the sinus from thickening of the coats.

But whatever the cause of obstruction, the flow of blood is arrested just as it should pass out of the cranium into the internal jugular vein. The venous blood thus intercepted or retarded must then reverse its normal course, and go to swell the stream flowing through the sinuses on its way to the heart by the internal jugular of the other side. But from their structure, the sinuses are practically non-dilatable, and therefore every collateral channel is overtaxed to carry off the accumulating blood. The superior petrosal sinus on the affected side, which is fed by veins from the inferior surface of the middle cerebral lobe, and also *by veins from the tympanum and internal ear*, is the first to become overcharged. As the obstruction is distal to the entrance of the cerebral and cerebellar veins already referred to, they also become turgid, and also have their normal flow reversed more or less. They are then liable to convey some of the blood which was intercepted at the lateral sinus into other sinuses, such as the inferior petrosal or longitudinal. These veins, however, are dilatable, and have exceedingly thin walls, which, under distension, are liable to become varicose. The effect of this distended varicose condition is a continued and localised pressure upon the delicate surface of the brain, together with consequent œdema and impaired nutrition.

The chain of diseased process is therefore considerable, and very connected, and quite sufficient to induce softening or other form of diseased action, as suppuration. And this altogether irrespective of the liability to the deposit of septic matter which, if present in the lateral sinus, has now, by the circuitous channel I have described, direct access to the surface of the brain. It is to me, therefore, very clearly evident that blood flowing from the tympanum or internal ear can, under the conditions I have specified, pass directly into the lateral or into the superior petrosal sinus, and from thence by the cerebral veins direct to the surface of the brain. And thus, as I contended at the outset, although admittedly there may be no *normally* direct vascular connection between the ear and the substance of the brain, there is nevertheless an *abnormal* or indirect connection which in certain conditions does exist.

It forms no part of my subject to deal with the practical

aspect of the questions that naturally arise, having reference to treatment. I have restricted myself to anatomical and pathological considerations, in the belief that I will have contributed a sufficiency of suggestive matter in my references to the importance of early and earnest attention to the diseased condition commonly called "a running ear," and as an important department of the necessary treatment, in directing attention to the probable, nay, certain value which should be placed on the operation of trephining the mastoid in cases of retained pus.

EXPLANATION OF PLATE.

Figure 1. Drawing of right temporal bone in adult. A-B, the squamo-mastoid suture through which pus may exude in young subject. C, the styloid process.

Figure 2. Left temporal bone in young subject. A portion of squamous plate has been cut away to show the single mastoidean cell or antrum mastoideum (D). The mastoid process is seen in section (F) to be destitute of cells. The tympanic bone or ring is also shown (E).

Figure 3. Right temporal bone in adult, with squamous plate and cortex mastoidei removed by one cut. Shows antrum mastoideum (G); the inner wall of tympanum (H); the mastoid cells very fully developed (K); and the styloid process (P).

NOTES ON A CASE OF POISONING BY CARBOLIC ACID.

By ROBERT KIRK, M.D., F.R.C.S.E.

CASES of poisoning, whether accidental or intentional, ought, if the symptoms have been observed at all, to be recorded; and this applies not only to those cases in which the commoner poisons have been used, but also and more stringently to those in which rarer or less commonly known drugs have been employed. In these records much material would be collected which would be interesting not only to the medical jurist, but also to the physiologist and the physician. On this account, and because of the peculiarity of some of the symptoms observed, I have thought a consideration of this case not unworthy of the time of this Society.

From looking over the various journals and the various toxicological treatises, I should think that about thirty cases of carbolic acid poisoning have been reported, in all of which a considerable variation in the symptoms has been observed.

Of the thirty cases, at least five-sixths of the whole have been accidental. Half of all the cases have arisen through an attendant having supplied the acid instead of some other drug, and one-fifth have occurred by the person mistaking it for beer or spirits. A certain amount of carelessness must therefore be credited with having supplied the great majority of the cases. Only one-sixth of the whole have been the result of deliberate suicidal intent, and as far as I can learn, no case of murder has occurred in which this drug was the poisonous agent. In each case which has been reported, a certain amount of treatment was tried, varying from the simple exhibition of oil to the repeated washing of the stomach with the pump. Notwithstanding all efforts to save the life, death resulted in at least nine cases out of ten, in periods varying from a few minutes to two days. One case of suicidal poisoning is reported by Dr. Davidson * which is very interesting, as recovery took place after four ounces of crude carbolic acid had been swallowed; but in this case the stomach was well filled, and much of the acid was immediately rejected by vomiting.

The symptoms, according to Dr. Taylor, † are shortly as follows:—The mucous membrane of the lips and mouth is white and hardened. There is severe pain in the stomach, with vomiting. The vomited matter has the peculiar smell of the acid. The skin is cold and clammy. The lips, eyelids, and ears are livid. The pulse is 120, intermittent. The breathing is difficult, and is attended with frothing at the mouth. Insensibility occurs, passing rapidly to coma, with stertorous breathing. The pupils are contracted and insensible. Dr. Gerard ‡ reports a case in which these symptoms occurred, the patient dying in three quarters of an hour.

Mr. Anderson § reports a case in which a drachm in oily solution was taken by mistake, and in which an emetic certainly got rid of some of the poison. In this report, the following symptoms, differing from those already given, were noted:—The features were occasionally convulsed. The respiration was shallow. The pulse was 140, small and hard. The intelligence was perfect. The patient died in twelve hours, apparently from sympathetic depression of the heart's action.

Mr. Swain ‖ reports a case in which insensibility came on in eight minutes after an ounce and-a-half had been taken,

* *Medical Times and Gazette*, 1875.
† Taylor on *Poisons*. 3rd edition. P. 244.
‡ *Lancet*, 1871.   § *Lancet*, 1869.   ‖ *Lancet*, 1869.

and death took place in an hour, although the Silvester method had been persisted with for half the time. The pupils were insensible to light, equal, and neither dilated nor contracted. The pulse was very frequent, small, thready, and intermittent.

The notes of the case which came under my notice are as follows :—

Margaret M., æt. 23, a domestic servant in the employment of an Edinburgh physician, left her employer's house on the afternoon of 16th April, 1879, taking with her a bottle containing two ounces of Calvert's No. 1 carbolic acid solution. She arrived in Bathgate at 4·45 P.M., and went to her mother's house. After talking over some family affairs of an unpleasant nature, she retired to an inner room, where she remained not more than a couple of minutes. Coming back to the kitchen, she sat down on a chair and quietly said—'I will leave you all in peace.' Her mother, noticing nothing unusual in her manner, thought she meant to leave again with the next train, and busied herself in preparing some food. Presently she heard a moan, and looking round, saw her daughter slipping off her chair. With a little difficulty, she was roused up sufficiently to walk over to the bed, but had no sooner reached it than she became unconscious. I was hurriedly sent for, and in less than half-an-hour from the time she left the kitchen I saw the patient. She was lying on her back. Her whole body was perfectly flaccid. Her pupils were insensible to light, and were neither increased nor diminished in size. Her face was livid, and from the corner of the mouth a white streak passed downwards to the chin. Her breathing was slightly laboured ; the respirations eight per minute. Pulse 40, small, but regular. Her extremities were cold. I asked a few leading questions, and was shown a phial, the label of which was effaced. About half a drachm of fluid remained in it, and this was easily recognised to be carbolic acid.

I at once sent for a stomach pump ; but, on my father's arrival with one, the symptoms seemed such that it was deemed best to leave the patient undisturbed, as death appeared to be imminent. The patient had not vomited at all, and there were no convulsions ; but, as the breathing seemed more interrupted than at first, a little oil was introduced into the mouth, with the object of lubricating the fauces. At six o'clock, or fifty minutes after the poison had been taken, her respiration became irregular, and until her death a register of both it and the pulse was kept. To read all the variations would be tedious, and I will therefore

describe the symptoms as they appeared after considerable intervals.

At 6·15 P.M., the pulse beat regularly for seventy seconds about 40 per minute, it then increased in frequency, until at the end of two minutes its rate was at least 100. At this rate it continued for half a minute, and then gradually fell to 40 again, reaching its slowest rate in about a minute. The respirations were 9 per minute, deep and quiet, and continued so for about ten seconds after the pulse rate began to rise, when they also increased in rapidity, so that about eight or ten seconds after the pulse rate had reached its climax they were 30 per minute, shallow and gasping, and continued so until the pulse began to fall when they also slowed to 9 again. In about seventy seconds this acceleration again occurred.

At 6·45 p.m. the variations in pulse and respiration were more marked than before, but each remained regular during the minute when they were slow. The pulse was now beating about 50 per minute, and after fifty seconds it became rapidly quicker until it reached 130, at which rate it continued for half a minute and then fell as quickly as it had risen. The respirations during the pause between the accelerations were not more than 8 to the minute, deep and quiet. Almost simultaneously with the pulse the rate increased in twenty to twenty-five seconds to 45 per minute, and then fell with the pulse.

At 7·30 P.M. the character of the pulse line had changed, the change being a gradual one, and, instead of the steady fall, it recovered itself somewhat and then fell more slowly. The respirations also became irregular, and were much slower than before, during the period of quiescence. The pulse beat quietly and regularly for three quarters of a minute at about 40, and in from ten to fifteen seconds it rose to 150, at this rate it continued to beat for twenty seconds and then fell quickly to 90. In ten seconds the rate had again increased to 115 or 120, and then it fell more gradually until in half a minute it had reached 40. The heart sounds were quite pure, but the beating was tumultuous, and the contractions appeared to be only partial. The respirations were now very slow, about 2 in the minute, very deep, not stertorous. With the pulse they rapidly increased in frequency and decreased in depth, until they were 50 per minute, and then they gradually got fewer in number and deeper until the slow rate was again reached. From this onwards the time between the acceleration of the pulse and respiratory rates increased, and the pulse became

slower, and the respiration ceased for a longer or shorter period, until, at 8·15 P.M., when the condition was most typical, the symptoms were as follows. The pulse, when quiescent, was now slightly irregular, beating only from twenty to thirty per minute. After continuing at this rate for from seventy to ninety seconds, the beats being very feeble, it rapidly became faster, until, in half a minute, it was quite impossible to count it, and the cardiac sounds were so rapid that the ear could not accurately distinguish them. This high rate continued for about twenty seconds, when the pulse rapidly fell to 120, became again slightly quicker, and, in half a minute, reached
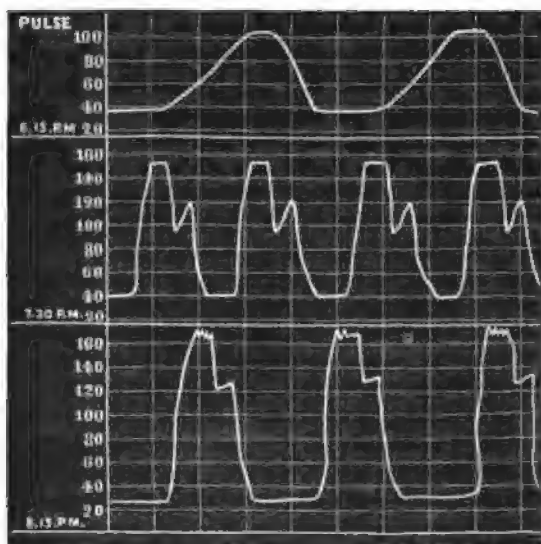
its lowest limit. After being suspended for from fifty to eighty seconds respiration began with one or two deep inspirations, rapidly succeeded · by short, gasping ones, until the rate was 60. This rate gradually decreased in frequency, while the inspirations became deeper, until the pulse had reached its lowest limit, when there was generally only one long, deep respiration, and then cessation for at least a minute. Indeed, on more than one occasion I remarked to my father that the patient was dead, when the breathing began again with a series of gasps.

This most interesting condition lasted for half an hour, and then both the pulse and respiration became quieter and more

regular, until the patient died at 9·15 P.M., four hours after the poison was taken.

Unfortunately, the police were satisfied that it was a case of suicide, and no warrant was got for an examination of the body. Permission was obtained, however, to examine the throat and abdomen.

Autopsy—performed 60 hours after death. The face was florid, with the exception of a white streak passing from the corner of the mouth to the chin. The body was well nourished.

The mucous membrane of the mouth and pharynx were whitened. The epiglottis was œdematous on its upper surface. The glosso-arytenoid ligaments were swollen and congested. The interior of the larynx was normal.

The abdomen having been opened the diaphragm was divided and the contents of the thorax were removed. The lungs were congested, especially posteriorly, and the fluid which could be pressed out of them was nearly black. The heart was normal. The right side contained dark coloured fluid blood. The left side was contracted.

The mucous membrane of the œsophagus was bleached, and at its lower end was more or less detached.

The stomach contained about four ounces of grumous-looking fluid, which smelt very strongly of carbolic acid. Its mucous membrane was detached, in places, in pieces as large as a half-crown, was intensely congested and of a greenish-red hue. It could be peeled off the walls quite easily. The duodenum was also in a condition of intense inflammation. The remainder of the intestinal canal was normal.

The liver was congested, and on section, smelt strongly of the acid.

The spleen and pancreas were normal.

The kidneys were congested and the pelvis of the right one contained a small recent blood clot.

The bladder contained about a couple of ounces of urine.

The uterus and appendages were normal.

Such then is an account of the case, both as regards symptoms and *post-mortem* appearances, and the chief points of interest are, that it was a case of suicidal poisoning, that the symptoms were not masked by the exhibition of any treatment whatever, and that these symptoms as far as the circulation and respiration were considered, were such as have not as yet been recorded.

The question may be asked, Why was no treatment employed, especially, when death did not ensue until four hours after

the poison was taken?   I will simply answer that within half-an-hour she could not swallow, the oil escaping from her pharynx merely by gravitation, and that twenty minutes elapsed before a stomach pump could be procured and the patient was then evidently moribund, and gradually her symptoms became more and more serious, so that her decease was momentarily expected.

It certainly was a pity that no examination of the brain could be made as the symptoms pointed very clearly to marked toxic effects in that organ.   The other *post-mortem* appearances were such as might have been expected when the powerful nature of the drug is taken into account.

ON THE USE OF ANTISEPTICS IN OBSTETRICS AND GYNECOLOGY.

By WILLIAM L. REID, M.D., F.F.P.S.G.,

Physician to the Dispensary for Women, and Physician Accoucheur to the Western Infirmary, Glasgow.

WHILE on a visit to some of the German hospitals last year, seeking to improve my knowledge of obstetrics and gynecology, I was struck, amongst other things, by the attention paid to antiseptic precautions ; and on further inquiry I became impressed with the fact that the results, even in circumstances otherwise not particularly favourable, were much better than those obtained in this country.   On my return, I thought of comparing the practice I had seen and its results with the forms of practice and results in our own country, but I found that statistics of a sufficiently exact and reliable nature were so difficult of attainment that I have, meanwhile, given up the attempt.   My present communication, therefore, has but three objects in view :—1. To show what results are obtained from, or at least accompany, the use of antiseptics in obstetrical practice ; 2. To give prominence to the fact that we here and now have need of improvement ; and 3. To mention what I believe to be the most desirable and practicable methods of using antiseptics in obstetrical and gynecological practice.

In the first place, then, as I can speak to some extent from personal observation, and as I have had particular information in regard to the treatment there, I take the results of practice at the Landesgebäranstalt in Prague, as a specimen of what

may be done by antiseptic applications. Professor R. von Weber, who drew up the report of that institution for 1879, is an enthusiastic gynecologist and believer in the virtues of carbolic acid. He kindly sent me the report as soon as it was printed, and the statistics which follow are derived from it.*

It may be well shortly to describe the practice there. The hospital is strictly clean, and is often disinfected. Every physician, student, and midwife, is supplied with a 2 per cent solution of carbolic acid, permanganate of potass, soap, nail brush, and nail scissors, and before entering a ward must wash the hands in soap and water, if necessary, cut the nails, use the nail brush, and then the disinfecting fluid. If a midwife is seen once with nails imperfectly cleaned she is reproved ; if a second time, unrelentingly dismissed from the hospital. Before and after every vaginal examination the hands are washed with a disinfectant fluid. The professors, assistants, and chief midwives, are expected to set a perfect example to those below them in office. Near the end of pregnancy, if there be much leucorrhœal discharge, if it be fœtid, or if the patient be feverish, a 2 per cent vaginal injection is cautiously given twice a day.

A woman taken in labour is put on a bed which has been carefully cleaned and purified. Her hands and nails are thoroughly cleaned, and they, as well as the genital organs and lower parts of the body, are washed with a 2 per cent solution of carbolic acid. During the course of labour, after the membranes burst, a 3 per cent solution is injected into the vagina every two hours, especially where the amnionic fluid is fœtid, where the child is known to be dead, where the membranes have burst and the head not yet engaged in the pelvic cavity, where the patient is feverish, where the presentation is abnormal, where the patient has come from the general hospital, or where the placenta is retained. When once the perineum begins to be strained, two hand sprays are brought into use and continue to play till the placenta has been removed. For the first three days the vagina is washed out three times a day, and afterwards twice a day till the lochial discharge ceases. If it at any time becomes putrid, a 3 per cent solution is used every three hours. In all cases where instrumental or more than ordinary manual interference is necessary, the steam spray is used. The lochial discharge is received on napkins which are rendered antiseptic before being applied, or on carbolised cotton wool, which is afterwards burned. Further, 3 per cent intra-uterine injections are given where

* Those who are specially interested in the subject will find a copy of this report in the Faculty Library.

there has been any special manual or instrumental interference, where the labour has been protracted, where the foetus has been dead, where gas or putrid amnionic fluid has passed from the uterus, where the temperature has risen, and where delivery has taken place on the street.

In the following classes of cases, intra-uterine injections of 3–5 per cent carbolic water, or 1–3 chlorine water are used— viz., when the temperature is raised and where there is a suspicion of infection, where shivering takes place, and where the lochial discharge becomes foetid. The conditions which are held to contra-indicate intra-uterine injections are, spasmodic contraction of the cervix uteri, or in the later days of the puerperium, complete involution of the vaginal portion, para- or perimetritis, deep lesions of the cervix, or rupture of the uterus. Lately, in bad cases they are irrigating the interior of the uterus for ten or twelve hours at a time, and where the temperature is high using iced carbolised water for this purpose.

Before we look at the statistics of the hospital, it may be mentioned that the cases taken into it are often of a very unfavourable kind, and the following may be given as an example. A woman was taken in labour at Elbe-Kosteletz, on the 2nd of March, at five o'clock in the afternoon. The membranes burst at 7 A.M. on the 5th, delivery with the forceps was essayed on three different occasions, and one attempt at perforation made. She was then put into a cart and jolted over the sixteen miles which lay between her own village and Prague, where she arrived at half-past seven on the evening of the 5th. The vulva and buttocks were black and blue, the former very oedematous, the mucous membrane of vagina much swollen, pelvis contracted antero-posteriorly, head jammed into the pelvic inlet, with fracture of the cranial bones. The cord had prolapsed and was pulseless. No labour pains existed, the temperature was 101°, pulse 84, and very feeble. Three per cent carbolic solution was injected into the vagina, craniotomy and cranioclasm performed, and a partially decomposing placenta removed. Then, on account of the discharge being offensive, the uterus was washed out with a 2 per cent carbolic solution. Recovery followed.

The general result of practice such as this was as follows :—

During the year 1879, 3,051 children were born in the hospital, including 41 cases of twins. The maternal deaths in the institution were 21, of which only 11 were due to puerperal diseases. Thirty sick women were transferred to the general hospital, of whom 22 recovered and 8 died—6 of con-

sumption, 1 of Bright's disease, and 1 of small-pox. In all, 29 of the women who were delivered in the institution died during the year. There is thus given a general mortality of 0·96 per cent, and a puerperal mortality of 0·36 per cent. This is believed to be the lowest mortality ever reached in any lying-in hospital. The author of the Report sought to compare his results with those of similar institutions, but found that he could not do so, owing to the fact that they did not follow the career of cases which were transferred to general hospitals, or if they did, the results were not given, and he holds, and I think rightly, that until this is done, mortality statistics are sure to be deceptive.

Secondly, let us consider whether we have need of antiseptic precautions in this country. For the reason mentioned by Professor Weber, it is impossible to compare our statistics with his; but let us take as a specimen an institution whose figures, so far as they go, can be depended upon—viz., the Royal Maternity Hospital in Edinburgh. Dr. Halliday Croom, one of the physicians there, read a paper before the Edinburgh Obstetrical Society in November last, on the " Use of Antiseptics," in which he stated that out of 10,043 women who have been delivered there, nearly 2 per cent—that is, nearly 1 in 50, had died. In the recently opened building the results are rather worse than better. I quote Dr. Croom's words :—" The new hospital was opened in May 1879, and from that date till the end of October 1880, 320 women have been delivered in the building, and of these 320 women 12 have died, making the mortality 1 in 26·6—3·89 per cent—a sufficiently startling fact. In the new hospital no similar explanation of the high death-rate is to be found. Here we have a completely new building, with all the most modern sanitary improvements, examined by the most competent sanitary authorities, and conducted with all due care and caution, with a death-rate accompanying a normal process I think I may say higher than now after the capital operation of ovariotomy in the hands of Dr. Keith." Of these deaths 1 in 32 have been from puerperal fever. I do not stop to discuss the question as to how many of these cases resulted from a *materia peccans* introduced into the system through a wound, because I believe that this is now generally recognised as the almost sole cause of puerperal fever.

I am disposed to think that all that has been mentioned constitutes but a small part of the mischief done by the absorption of septic matter in connection with labour. Amongst the patients who appear at the Dispensary for

Women at the Western Infirmary, I am often struck by the number who date their uterine diseases back to illness after a confinement. How many women are there who are not killed by such attacks, but only maimed and rendered sterile? Dr. Matthews Duncan mentions, in one of his tables in *Fecundity, Fertility, and Sterility*, that 47·9 per cent of mothers have no children after the fifth year of married life. Why so? Emmet believes that pelvic cellulitis is a marked cause of sterility, and that when limited in extent, it is comparatively seldom recognised. How many of these attacks are due to septic absorption? In a note on page 411 of Smellie's *Midwifery*, Dr. M'Clintock makes the following statement :—"For my part, I believe that many of the cases of rigor followed by pyrexia coming on about the third, fourth, or fifth day of childbed, and which, from being unattended by any marked uterine pain or tenderness, are commonly described under the euphemistic name of *weid* or *milk fever*, are really not milk fever at all, but have a septicæmic origin." Matthews Duncan, in a note on page 424 of the *Diseases of Women*, by West and Duncan, adverts to the fact that Virchow believes that parametritis generally accompanies puerperal septicæmia. Dr. Croom, in the paper already quoted, says—"Early in my first quarter three maternal deaths from septicæmia rapidly succeeded one another, originating in the manner I have already described. During the same period high temperatures and frequent attacks of pelvic peritonitis were common. After the third death the antiseptic precautions just described were adopted, with the result that the temperature became normal, the peritonitis disappeared, and no further case of septicæmia occurred. On assuming duty this quarter I found a septic case in hospital which died from septicæmia, and shortly after a second patient succumbed to the same disease. Thereafter antiseptic precautions were energetically carried out, and no further case occurred, and the temperature, with one or two exceptions, to which I have alluded in my report, became and continued normal; for I hold that the frequent pelvic disturbance and high temperature which showed themselves in the early days, both of my present and former quarters, were owing to septic influences, these becoming definitely and fatally developed when specially predisposed persons were attacked."

Now, if it be true that so many young mothers become sterile after a first or second labour, and if many thousands of women bear the weariness and pain always associated with pelvic disease; and if, further, such mischief can be traced back to

any great degree to septic absorption, how careful ought we practitioners of midwifery to be, that all we can do be done to avert such baleful consequences. A leading article in the *Brit. Med. Jour.* of 5th Feb., of this year, on Midwifery in the Paris Hospitals, shows that there there is immense room for improvement in the treatment of pregnant and lying-in women in regard to the use of antiseptic precautions.

Thirdly.—What are the most desirable and practicable methods of using antiseptics in obstetric and gynecological practice? I do not quite see my way to recommend you to go to every confinement accompanied by two midwives, or even senior medical students, whose sole duty and pleasure it would be to keep two hand sprays at work during, and for a few minutes after, the passage of the child over the perineum. I nevertheless would, and do advise you to go to every case of labour armed with an antiseptic in some shape or form. The following method is one which personal experience enables me to recommend. Let every labour-expectant provide herself with a two ounce bottle of 1–20 carbolic oil and the same quantity of carbolic glycerine. When labour sets in and a vaginal examination is to be made, let the practitioner oil his whole hand, after having washed it thoroughly and passed it through a 1–30 watery solution made by reducing the carbolic glycerine. Let the carbolised oil be used in this way every time an examination is made. This would serve two good purposes, less vaginal mucus would be removed by the finger, and a film of carbolised oil would be left to prevent septic mischief in the canal. After the labour is over, the external genitals are to be bathed by the nurse with a warm 1–20 solution, and a napkin applied, on the face of which is laid a piece of lint damped with the oil. This bathing and dressing to be kept up for at least a week. These precautions would, I believe, do away greatly with the risk of infection, and yet would not involve unreasonable trouble on the part of the attendants. I do nothing more than advert to the safety secured by these means to the practitioner, where he deals with a diseased patient.

In the case of a woman delivered of a dead child, where the placenta and discharges are foul, it is desirable to wash out the vagina twice a day with a pint of warm carbolised water, using a Higginson's syringe, with a metal or vulcanite vaginal point, which possesses only lateral exit holes. This would prevent decaying material from adhering, if the point be not too old, properly washed and kept in a carbolic solution. None of the fluid could be forcibly and dangerously injected

into the uterus, even with only very moderate care in the use of the instrument.* A better apparatus is the syphon irrigator which I show you. As you see, it is a soft rubber tube armed with a piece of pewter at one end to keep it in the basin of fluid, a vulcanite point with a stop-cock at the other end, and a piece of sheet copper fixed to the tube, where it would otherwise be too sharply flexed over the edge of the vessel of fluid. With this instrument, and with a little care, there is no risk of too much force being used or air entering with it, and these are the chief dangers of intra-uterine injection.

In simple forceps cases, if no previous vaginal examination has been made with the unprotected fingers, I think it is un-necessary to wash out the vagina, either before or after the operation, but simply to freely carbolise the hands, instruments, and napkins used. It is not advisable to wash out the vagina before the operation, because it deprives it of its natural and valuable lubricating mucus, and because, presumably, no air has had access to it; nor afterwards, because the strongly carbolised oil will serve the purpose for some hours. But, on the other hand, if there has already been much vaginal manipulation, it is desirable to begin by washing it out with carbolic water, and then lubricating it freely with the oil. After every case of operative interference, the vagina should be washed out twice daily for a week, and carbolised lint, gauze, a sanitary towel, or some such dressing applied to the vulva.

Where either bipolar or ordinary podalic version is practised, or where there is any such often repeated manipulation as is involved in the removal of the cranial bones, and in embry-ulcia, I am of opinion that the spray should be used as well as the oil, else the frequent introduction of a little air would be pretty certain to lead to decomposition of the uterine fluids.

I think that injections into the uterus of a woman recently delivered are justifiable in certain circumstances, such as where there has been free non-antiseptic manipulation in its interior, and where decomposition of its contents already exists. But I would never wash out the interior of such a uterus without great caution, and some fear of the result. In 1878, Küstner, and in 1879, Bruntzel, published cases where sudden death resulted from the careful intra-uterine injection of weak carbolic solutions. Death was considered to result from the entrance of air into the veins, and carbolic intoxication. On

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* In this case ergot should also be freely used to induce the thorough expulsion of any residue of the discharge.

8th January of this year, Dr. W. J. Smyly, formerly assistant physician at the Rotunda in Dublin, made a communication on this subject to the Obstetrical Society of that city, in which he gave the details of a case where a Higginson's syringe was used for injecting a solution of Condy's fluid. Collapse immediately followed, and in twenty minutes the woman was dead. He recommends the irrigator and a metal tube, as the gum elastic one is apt to crack, and so become the medium of conveying infection.

In regard to abortion, much the same treatment as that already mentioned is applicable. There is, in this case, less to be feared from intra-uterine injections. Where decomposing matters are retained, it is desirable to wash out the uterus as well as possible, and having emptied it thoroughly, again wash it out, and use vaginal injections till the discharge has ceased. I need hardly say that tents and plugs of all kinds ought to be carbolised.

In ordinary gynecological practice, antiseptics are of great service. Before, during, and after operations on the perineum, vagina, and uterus, irrigation is very useful. It washes away blood, so that more delicate manipulation is possible, and the parts are left sweet and clean. Continuous irrigation for a day or two after keeps down inflammation, and favours union by first intention.

According to my thinking, nobody should make a vaginal examination without the use of some antiseptic, both for his own and his patient's sake. At the Dispensary for Women at the Western Infirmary, no student or physician examines any woman per vaginam, without first bathing his hands in 1-20 carbolised water, and lubricating them with a preparation which I show and commend to those of you who have occasion to use such an agent. It is recommended by Dr. Atthill, and consists of pure soft soap three parts, glycerine one part, and carbolic acid five grains to the ounce. That used by me has ten grains to the ounce, and is made more agreeable by the addition of a little bergamot. All our hands are washed and dried, and the same routine practised before the examination of each individual patient. Although it involves a little extra time and trouble, I have seen no reason to think the time misspent, or the trouble unrewarded.

REMOVABLE AXIS-TRACTION RODS FOR MIDWIFERY FORCEPS.*

By JAMES G. LYON, M.A., M.D., F.R.C.S.ED.

(Read before the Medico-Chirurgical Society of Glasgow, 4th March, 1881.)

THE principles on which M. Tarnier's "Midwifery Forceps" are constructed may be summarised thus:—

I. To allow traction to be made exactly in the axis of the pelvic curve, whether the fœtal head be above the brim of the pelvis or in its cavity.

II. To allow mobility to the fœtal head to follow the direction impressed upon it by the irregularities of the pelvis.

III. To indicate to the operator the exact direction in which he should, at any moment, make traction.

Ordinary pelvic-curved forceps, such as Simpson's, Matthews Duncan's, Barnes', or Roberton's, only allow of traction being made *approximately* in the axis of pelvis when the head is high up: a very considerable amount of the traction force being expended not only uselessly, but injuriously, in crushing the maternal structures against the pubes, and these forceps do not allow sufficient mobility to the fœtal head to follow its natural direction, nor do they indicate the proper and constantly varying direction for traction.

Reference was made to various forceps contrived to get over these difficulties—Dr. Aveling's and Dr. Christie's with perineal curves in the handles, and Dr. W. L. Reid's with perineal curve in the shanks of straight forceps. M. Tarnier's forceps, with traction stems and handle separate from the ordinary or "prehension" handles, were noticed, and asserted, on mechanical grounds, to be efficient in carrying out his principles, but complex, cumbrous, and expensive.

Professor A. R. Simpson's adaptation of Tarnier's rods permanently fixed to a modified Simpson's forceps were objected to on various grounds, chiefly their fixed attachment—preventing the forceps being used without them—and because they were difficult to use from the long curved right rod coming much in the way during introduction and locking of the blades.

Notice was taken of a paper by Dr. Archd. Reith, in the *Edinburgh Medical Journal* of February last, condemning all axis-traction forceps as being mechanical impossibilities, and his mechanical principles disputed.

* This paper has already been published in full elsewhere, and the present is only an abstract.

The axis-traction rods now shown to the Society, and of which woodcuts are given below, were stated to be free from the objections alleged against others, and to give a means of obtaining all the advantages of Tarnier's principles fully as efficiently as his instrument, and in a simpler and more generally applicable manner.
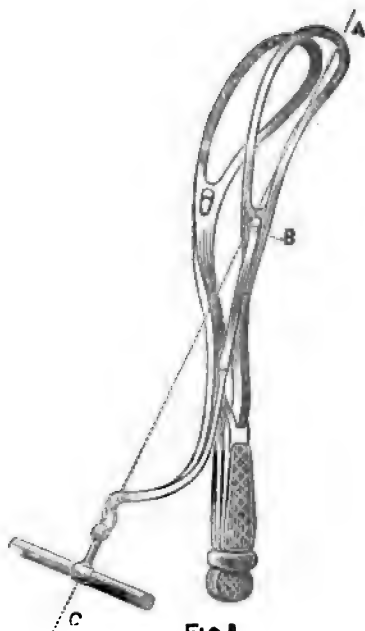
Fig.1

They can be fitted to any pattern of pelvic-curved mid-wifery forceps; they do not in the least complicate the introduction or the locking of the blades, and if not required, they can be detached completely, leaving the forceps unaltered, except by the addition of a small bridge of metal soldered across the bottom of each fenestra (*a a*, Figs. 2 and 3), so as to form a rounded aperture, into which the hook (Fig. 4) of the traction rod slips when the rod is at a right angle to the blade, and which prevents it coming out when in any other position.

The rod which is attached to the left or lower blade (seen from *inside* at Fig. 2) carries at its free extremity the traction handle, *b*, which has a swivel joint, and the half of the right rod, *c, f*, swinging free from the ring which connects them together.

The upper half of the right rod (Fig. 3, *d, e*) hooks into its

corresponding blade (seen from the *outside* at Fig. 3), and is lightly clamped on to the shank at *e*, this point being kept as near the lock as possible without interfering with its action.

The junction between the two halves of the right rod is effected by means of an open-wedgebolt, which is extremely easily worked, and at the same time is thoroughly strong and efficient—this is very imperfectly shown at Fig. 5.
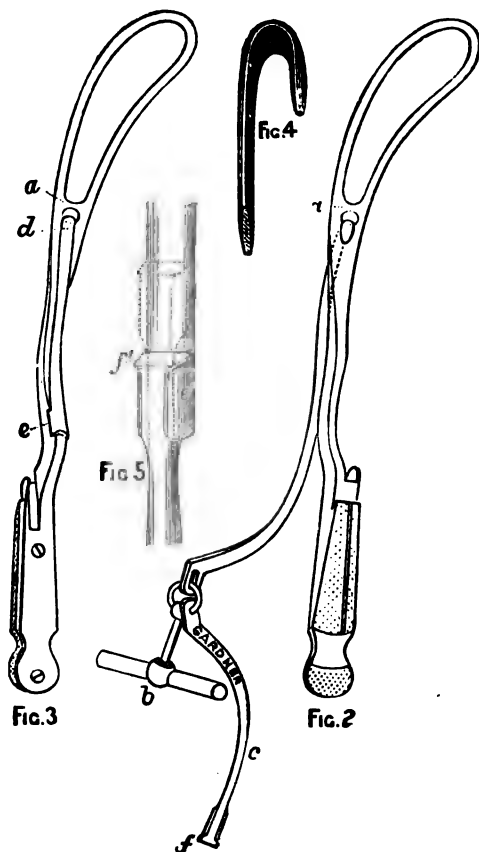
To use these traction-rods, hook in the *left* rod, and introduce the left or lower blade (with its rod attached) as usual. Then hook in the upper half of the *right* rod, and clamp it on to its shank. (In practice it is better to keep this portion attached as it prevents its being mislaid.) The right or upper blade can then be introduced in the ordinary way, and the

forceps locked, as this little addition does not in the least complicate either process.

A stout india rubber ring (similar to an umbrella ring but stronger) is now to be slipped over the handles of the forceps, and the lower end of the right rod freed from its shank, the other half (at present hanging free attached to the traction handle) is brought up, and the wedge *f* guided by the finger into its catch, *e.*

The rods being now complete, as seen in Fig. 1, traction is to be made entirely by the handle *b*, in the line indicated by A B C: the forceps' handles being left perfectly free, bound together by the india rubber ring or a tape.

As the head descends in the pelvis these handles move forwards, and indicate that the direction of traction is to be altered so as to keep the traction rods *just in contact* with the shanks, exactly as in the use of Tarnier's instrument.

It will be observed that the junction of the two halves of the right rod will be frequently external to the vulva, and in no case can be farther than about an inch from it, and this only when the head is above the brim, and the maternal pelvis deep. The pattern of the forceps will also make a slight variation in this.

Mr. J. Gardner, surgeon's instrument maker, 45 South Bridge, Edinburgh, who has carefully carried out the mechanical details for me, is prepared to fit these axis-traction rods to any pattern of pelvic-curved forceps at a moderate cost (about 20s.)

INTRODUCTORY LECTURE TO THE CLINICAL OBSTETRIC COURSE OF 1881, IN THE GLASGOW MATERNITY HOSPITAL, NORTH PORTLAND STREET.

By HUGH MILLER, M.D.

IT is useful at times to look into the past history of a science and note the progress made in the search for truth. Thus, we gather up from age to age the results of honest toil. In no department of study is this more true than in the medical one. After a long period during the barbarous ages, when disease was looked upon as an evil power to be propitiated by sacrifice and charms, we come almost by surprise upon the time when the notion of a reign of law in material nature was laid down

by Hippocrates. By him we were first taught that disease can arise by an excess of a morbid material in the body, and from him we derived a plan of treatment in some cases still practised, I mean that of treating a disease by depletion. It was the second century after Christ ere the next forward step was taken. In that age of luxury in Rome, the old faiths were relaxing their hold, especially upon the opulent—pleasure was the chief pursuit and amusement of the learned; and the physicians going with the tide, lived more for pleasure and for profit than for study. Not so, however, with Galen; he started life in the full faith that there was a true art of healing, and, through patient investigation, was enabled to arrive at the conclusion that there were present in the body several vital forces co-existing and constituting the means for its nutrition. He believed disease was an additional force, and that the duty of the physician was to oppose the action of these morbid forces. Long afterwards, our profession learned that disease was an effort of nature to get rid of the noxious materials present; and instead of opposing force to force, as had been done hitherto, they changed their treatment simply to palliating the acute symptoms, and aiding otherwise nature's effort to restore the health. Still, the result of Galen's writings was to give a new standpoint and an impetus to the study of disease, and it redeems his luxurious age from much which was then discreditable to our profession. From his age, and at rare intervals, fresh gleanings of new truths in practical medicine appear. However, until the seventeenth century no decided advancement can be observed; but then, by a more careful study of anatomy, and as a result of painstaking observation at the bedside, new floods of light flashed upon them. Indeed, the discovery of the circulation of the blood by Harvey, and the researches of Malpighi and others, were thought to interpret all healthy and morbid phenomena. Then the prevailing idea came to be that every morbid material was an acid, or an alkali, capable of being rendered inert through destroying its action, and so the treatment was simply one of neutralisation. The main idea in the past, as now, was the healing of sickness, but it was almost entirely reserved for our own age to make the prevention of disease the highest aim of our practice. The light of truth, dim in the past, and growing brighter in its course, now seems to shine with a mid-day brightness upon the hidden functions of our life. We appear to have unlocked the chief secrets, and although we have not reached the age of complete exactitude, we have learned that disease in the body is a departure from, and a

modification of the healthy vitality. Now we study the phenomena of health as a prelude to the study of its morbid condition ; and we study the morbid state so as to endow the imperfect body with a renewed function, or appropriate to its use some substance in which it is deficient. However satisfactory this may appear we cannot afford to rest. Careful clinical observation must still be attended to. Thus, any present deficiencies in detail will be found out, and progress made towards an exact scientific knowledge of disease in general.

Turning now to our special study of midwifery, we find that it has no such long continued development as that which I have briefly sketched as belonging to medicine. In the olden times, midwifery practice remained exclusively in the hands of matrons. They were usually women of middle age, selected because they were handy at the bedside. As a class they had little or no special instruction for it, and usually they had even a very inferior general education. This need not be wondered at. There were no books in English published on the subject, and in cases of difficulty their trust in relics, charms, and incantations was absolute. So late as 1554, Bishop Bonner laid down the following injunction :—" A midwyfe shal not use or exercise any witchecrafte, charms, sorcerie, invocations, or praiers other than suche as be allowable and may stand with the laws and ordinances of the Catholike churche." About the middle of the sixteenth century general dissatisfaction was expressed at the ignorance which prevailed amongst them. Then the first movement was made to secure a training for midwives, but their education was found to be no easy task, owing to there being no female midwifery practitioners capable of undertaking it. The literature of the subject was kept entirely in Latin, and no translation of any of these was attempted before 1540, owing to the prejudice of the ignorant, who objected to the printing in the mother tongue of any midwifery details. In that year, however, a certain Richard Jonas, " at the request and desire," he says in his preface, " of diverse honest and sad matrons," translated into English Rhodion's work on the *Birth of Mankind*. He presented the MSS. to Henry the Eighth's Queen Catherine. This book passed through several editions. In one of these, writing of the success of his work, he mentions in the preface —" There be, since the first setting forth of this booke, right many honourable ladyes, and other worshipful gentlewomen, who have not disdained the oftener by occasion of this booke, to frequent and haunt women in their labours, carrying with

them this booke in their hands, and causing such part of it as doth chiefly concern the same purpose to be read before the midwife and the rest of the women there being present, whereby ofttimes, they all have beene put in remembrance of that wherewith the labouring woman hath beene greatly comforted and alleviated of her throngs and travail; whose laudable example and doings would God that many proud midwives would ensue and follow."

This book of Rhodion was translated into nearly every European language, and during the century following its publication was almost the only book from which midwives could gain any knowledge of their art. Amongst these, there would be, as now, many naturally expert, careful, and tender women who would endeavour to do their duty honestly according to their light, but in that age I fear traditional charms and directions would be by many preferred, and that the office of midwife would remain still chiefly in the hands of those who were confident in themselves and venturesome. Dr. Aveling, in his book on midwives, speaking of this period, says—" It is deplorable to think of the universal ignorance which existed at this time in those who practised midwifery, for if Rhodion, whose book is full of the grossest blunders, was the wisest professor of the art, what must have been the benighted condition of those whom he professed to teach ? When we think of the fomentations, bathings, fumigations, anointments, suppositories, pessaries, and the constant and cruel manipulations, which poor women had then to undergo in cases of natural labour, and the still more frightful mutilations which they had to suffer when any complication retarding the birth of the child took place, we cannot but regret that this most important branch of the healing art had not been earlier taken up and studied by such master minds as those which pursued it so energetically, and so immensely improved it, in the succeeding century."

The death blow to the exclusive practice of the profession by women took place in the beginning of the seventeenth century, through the invention of the forceps by Chamberlen. He kept their use secret, but his ability to aid in laborious and preternatural labours, and to effect delivery when others failed to do so soon became widely known. Father and sons were much sought after, and it is indeed remarkable that they were able to retain the secret about them in the family for nearly 100 years. At all events, their nature could not have been generally known till the year 1733, when Chapman published a description of the instruments, and gave the first explanation about

their use. During this interval the public had begun to realise the value of a male obstetrician over a female one. Gradually the old prejudices died away, and this important field of inquiry became henceforth opened to the medical profession. Had Chamberlen published for the benefit of mankind his discovery, instead of keeping it a close secret so as to enrich himself and his family, he would have conferred honour on his profession, and entitled himself to everlasting gratitude as one of the greatest benefactors of the human race. His keeping it private led to much heartburning on the part of those not in the secret, so much so that Peter, one of the sons, wrote, "Fame begot me envy and secret enemies which mightily increased when my father added to me the knowledge of deliveries and cures of women. They cunningly allow me a transcendency in the particular of deliveries that they may the more securely deny me my due in physick, as if the one were privitive or destructive of the other." I gladly turn from this insight into professional shortcomings to speak of one who deserves, and who has received, from his professional brethren, honour and fame. While the Chamberlens, no doubt, broke down the superstitious dread of women against male obstetricians, it was reserved for Harvey to rescue English midwifery from its age of darkness. Even while this branch of our profession was still looked upon with disfavour, Harvey chose to earn his living by it, and his master mind observed so much that was new to him and true to nature that his instructions and observations may still be read with advantage and interest.

Harvey's life and writings on Midwifery and Physiology are so well known that I will not detain you by speaking further of him. Neither need I recall to you the many names, British and foreign, whose writings during this century did much to enrich our store of obstetric and gynecological knowledge. However, just as this memorable seventeenth century was about to close, there was one born of whom Dr. M'Clintock writes, " As a teacher, author, and practitioner, there is no British obstetrician—certainly none of the eighteenth century, who deserves so high a place in our estimation as William Smellie. Nay, more, under whichever of these several aspects we may regard him, he scarce has an equal. Whilst of all the men, British and foreign, who have most largely contributed to the advance of sound obstetric knowledge, Smellie may justly stand in the foremost rank. No accoucheur, ancient or modern, unfolded so many of the principles of true obstetric science, and in his practice so consistently acted up to them." This testimony is recorded of one who first saw the light at the town

of Lanark in this county in 1697. We know nothing of his early training, or of his education for the medical profession. The first information about him states that he was an apothecary in his native town, and that he was in practice by 1720, the 22nd year of his age. In his early professional career he did not take any prominent position. He gave no early promise of future distinction. Amongst the small population about Lanark, Smellie never rose above being its second practitioner, and he eked out his scanty living by conjoining the business of village cloth merchant with that of medicine. He had naturally a strong taste for mechanical contrivances, and he had the restlessness common to such minds for planning new improvements upon crude instruments until they were exceptionally good, hence his long and short forceps are now improved upon only through being slightly altered to suit individual tastes. Smellie remained 17 years in Lanark, and during this time he was busy in self-instruction, reading such medical books as he could borrow or could afford to buy. From the very outset he seems to have devoted himself to midwifery practice. Throughout life he was a close accurate observer, as well as an industrious painstaking man, of very methodical habits, displaying indomitable perseverance in whatever he took in hand. He took notes of all the remarkable cases that occurred, and this habit seems to have been formed in the first year of his practice. When he began practice, Chamberlen's forceps were still secret property, but Smellie by and bye heard of the French having a new means to facilitate delivery. His restless mind being ready to catch at any new mechanical contrivance, he tried to find out what was written about it. While still in uncertainty, the description of the forceps by Chapman in 1733 reached him. This induced him to make a journey to London in order to acquire further information. Here he saw that nothing new was to be learned. So he proceeded to Paris, and under Gregoire he studied three months. After which he settled in London, and at once became a teacher of midwifery. Smellie had now reached his mature manhood, and he braced himself to his work. He showed great industry and accuracy of observation. He looked upon his life work with eyes perfectly clear and honest. He looked for success through the intrinsic merit of good honest work, and he prospered. As a lecturer he soon attracted much attention, and a numerous class of voluntary pupils came to him. In ten years he had delivered 200 courses of lectures to male students alone. It is said at the beginning he put out a paper lantern on which was written "*Midwifery taught here*

for five shillings." If it ever existed it did not last long, for his regular charge for a course of twelve lectures only was—
" Those who engage for one course pay three guineas at the first lecture ; for two courses, five ; for two months or four courses, nine ; for three months, twelve ; for six months, sixteen ; and for a year, twenty." Besides this, the pupils had to pay from 5s. to 10s. for each labour case they attended, and 6s. more to a common stock for the support of the parturient women. Smellie's mechanical knowledge enabled him to make contrivances for practical teaching very superior to any existing, yet not content with this, it is believed that to his influence the first maternity hospital owed its existence. This was the British Lying-in Hospital—founded in 1749— eight years after he settled in London.

If you wish to know the work of his life, I cannot do better than give you this summary by his biographer, Dr. M'Clintock, of Dublin. " He cleared away an immensity of the rubbish and superstition which enveloped the whole theory and practice of midwifery, and he laid down the true principles on which obstetric science should be based. He corrected and extended our knowledge of the anatomy of the gravid uterus, and of the positions of the fœtus in utero ; and he recognised, with far greater distinctness than had been done before, the successive steps in the process of natural labour. He was the first to investigate accurately the shape and measurements of the female pelvis, and the shape and dimensions of the fœtal head, paying special attention to the pelvic diameters in which the head moves during its passage through this cavity. . . . His observations on all these points tended to revolutionise the art of midwifery, and were brought to bear on the mode of applying and using the forceps ; and accordingly we find him laying down admirable rules for guidance in this matter —rules based upon definite principles, and far surpassing all those hitherto set forth.

" To Smellie we owe what were, until very lately, the best types of the long and short forceps, as well as the clearest directions for using them on rational and mechanical principles."

It is very pleasant to linger over the life of Wm. Smellie. He was a noble character, and an example of earnest living. Reared in a village, and living in it until the fortieth year of his age, we need not wonder at his London enemies speaking of him as being unprepossessing and awkward in appearance and manner. Special reference was made in a pamphlet about him as a rawboned large-handed man, and so coarse in

his manners that he never rose into any great estimation amongst persons of rank.   His character was simple, yet peculiar and pronounced.   The very earnestness of his life prevented him taking the place in society which his skill and learning, accompanied as these were with no ordinary ability as a musician and an artist, entitled him to occupy.   Yet this very defect made him all the more a thorough leader and a guide to those who came under his influence.   A typical Scotchman — like Carlyle—he possessed much of the old Cameronian spirit of courage and truthfulness, quiet thought, and manly feeling.   He had none of Carlyle's bitterness.   He was as independent in life and in thought as Carlyle was, but he succeeded; and when he had brought out the very best that was in him, he rested from his labours.   At 62 he returned to Lanark, where he finished the last volume of his work on midwifery.   Then he set his house and affairs in order, and slept with his people.

The work thus far accomplished under Smellie, was ably carried on by his nephew, Dr. John Harvie, by the Hunters, by Denman, and many others.   The impetus was so strong that it has gone on ever since, producing in each generation obstetricians who patiently have examined into minor details, and have helped to make our knowledge of the subject more exact.   To individually mention these would lead me to particularise that which will be carefully looked into during your course of instruction.   To-day I can only afford time to refer to one other historical topic—that which marks the chief advancement in our practice since Smellie's time—and which was the introduction of chloroform for the relief of pain in labour by Sir James Y. Simpson.

Considering how universal the presence of pain in child bearing is, and the horror with which most women regard it, it is surprising that until the introduction of chloroform, not one of the somewhat numerous drugs known either as soporific or as anæsthetic in their action had been turned to account for the relief of pain in midwifery.   This is all the more surprising owing to the fact that from very early times the anæsthetic qualities of certain organic substances were known, while isolated cases are on record of their actual employment during surgical operations.   Thus, in the works of Diascorides —a famous physician living 1800 years ago—in those of Pliny, and of others, we find stated in their writings that drinks, made up of somniferous herbs, were used for deadening pain in surgery.   In later times, Sir Humphrey Davy discovered "laughing gas," and by experimenting on himself, which in

those days seems to have been the favourite method of testing the physiological action of new chemicals, he came to the conclusion that, "as nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place." This valuable suggestion was not acted upon, and so the gas continued to be known more for its mirth producing effect than for giving relief from pain. A few years later, an American dentist discovered the anæsthetic properties of ether—a substance which had been known for several centuries without its valuable property for this purpose being recognised. So far as I have been able to ascertain, Sir J. Y. Simpson was one of the first to employ ether as an anæsthetic in this country; a few months later he was induced to test the properties of chloroform for a like purpose, with the result that since then, chloroform has become the most extensively used of all the drugs for the relief of human suffering. Its application to midwifery was a very great gain, and for this we are entirely indebted to Sir James. Since its introduction many other substances have been tried with more or less success. One of the most novel was that of Prof. Nussbaum, of Munich, who devised a method which is said to have the advantage of retaining the patient in a conscious state while rendering him insensible to pain. This is done by injecting morphia beneath the skin previous to the inhalation of chloroform, when it is found that the painless stage is reached before inhalation has proceeded to the extent of making the patient unconscious. From the many deaths which have occurred under the administration of chloroform in surgery, some anxiety and risk is felt each time it is given. To obviate this, if possible, the British Medical Association selected three gentlemen of this city to be a Committee of Investigation. After a considerable variety of substances had been experimented upon they selected ethidene dichloride—a substance like chloroform—and they reported that this was the most perfect anæsthetic of the series which they had tested. Probably it is the best anæsthetic for surgical purposes, because the blood pressure is said to be reduced by it less than by chloroform, and it has, therefore, less paralysing action on the heart. Any anæsthetic, to be perfect, when properly administered, should make the patient insensible to pain without causing a risk of death. In surgery, however skilfully applied, the action of chloroform is such as to prevent its use being ever entirely free from danger; not so, however, in midwifery, when applied during the second stage to the

extent simply of relieving pain, and only while the patient is in pain, chloroform is a safe anæsthetic. In surgery, the chief danger during its administration lies in a weakened flow of arterial blood to the brain, hence you may have observed in the operating theatre the surgeon suddenly put the patient, so to speak, *upside down*. He knows he will obviate the tendency to death if he can mechanically increase the flow of blood to the brain. In midwifery, from the very nature of things, this source of danger is never present. With each pain the abdominal and dorsal muscles fix the trunk of the body, and exercise great pressure upon the whole of the organs within it during the continuance of the expulsive effort. Meanwhile, the flow of arterial blood going from the heart, continues in its distribution over the body, but owing to there being less resistance presented by the vessels leading to the brain; the wave of blood passes chiefly in that direction. The risk to the woman is, therefore, periodically, at short and constantly return- ing intervals, necessarily warded off. This is the only reason I can give you for the immunity from deaths hitherto follow- ing the administration of chloroform in midwifery, when it is given for the relief of labour pains alone.

Passing from these references to the past in midwifery, I will proceed to consider another matter, and one which at present may have a greater interest for you than mere historical details. The study of midwifery is not the study of disease. It is, when properly performed, the study of a healthy function, and you must become acquainted with this healthy parturient state to realise whenever the slightest departure from it takes place. Now, an engineer could as soon acquire from books a knowledge of how to guide an engine, or to correct its defects, as an obstetrician would, from attending either a systematic course of lectures or the reading of a manual on midwifery, qualify himself for practice. Both must have the training of the workshop, and the young obstetrician's workshop will either be in a hospital or at the bedside of patients belonging to the outdoor department of one. Hence, the want of a hospital for confinements was felt as soon as the practical teaching of midwifery got into the hands of earnest men. In speaking of Smellie, I incidentally mentioned that the British Lying-in Hospital was opened in 1740. It is the oldest maternity institution in Britain, and is still about the best managed of the London ones. Whenever the necessity for giving practical instruction on midwifery dawned upon the minds of the teachers, efforts were made towards creating either hospitals or dispensaries. The difficul-

ties of arranging so as to gather together a number of students over an interesting case at the bedside of the patient at her own home, and the necessity for careful clinical observation, led to the selection of hospitals in preference to dispensaries wherever practicable. Unfortunately, the buildings selected were not very suitable. Any old dwelling which had outlived its day as a private residence was considered a suitable building for a hospital. Even now, our Metropolitan lying-in hospitals are old, and are not constructed or furnished with such essentials and facilities as exist in any modern building for a like purpose. They were, when acquired, altered to meet the requirements of a maternity, and the old buildings, with their imperfect facilities, for the most part exist still. Forty-three years after London had led the way, the first maternity hospital was opened in this city. This hospital was soon after interdicted by the Magistrates, and closed. In 1834, about forty-five years after this abortive effort, a second, and this time a successful, attempt was made to open this one. The public meeting which considered the matter declared that a hospital was desirable "for affording the necessary accommodation and assistance to indigent married females under circumstances which are at all times attended with suffering, and frequently with danger." The directors selected a flat and attics in the old Grammar School at the School Wynd. In these rooms eighteen beds were provided, and as soon as possible a fair start was made. I regret to say that for years the hospital did not receive much encouragement and sympathy from the wealthy. Although paying only a rental of £10, the Directors, seven years after it opened, agreed to remove to cheaper premises in St. Andrew's Square. The establishment was then reduced to eight beds. It was not until the hospital had been in existence for twelve years that the public gave pecuniary encouragement so liberally that the directors could consider the necessities of the hospital, so far as suitable accommodation and comfort were concerned. The twelfth yearly report mentions that the directors found the house "to be inconveniently small, there being only one moderately sized room for the accommodation of patients of all states and stages." In these circumstances it was deemed proper to look out for another house. One of larger dimensions, and in every respect more suitable, was found empty in the next tenement. It contained four good rooms and kitchen in one floor, and several good attic rooms. After two years' occupation, the landlord gave them notice to leave, the neighbouring tenants having complained about it, but the landlord allowed

them to remain when the directors agreed to pay an advance on the rent.   Here they continued until 1859, when the present site was purchased, and the then existing dwelling was fitted up for the purposes of a hospital.   The yearly report for that year (1859) speaks of the new hospital as " very eligible both in regard to situation and capabilities." It was fitted up to accommodate twenty-one patients.   This gave an average of 230 cubic feet for each ; just 70 feet less than the minimum cubic space allowed for an adult in the poorest part of the city ; yet, for twenty years, it was the only hospital in the West of Scotland having wards available for clinical obstetric study.

About five years ago our directors earnestly set themselves to provide a hospital more in accordance with the present day notions of efficiency.   To-day you may judge for yourselves how nobly they have accomplished it.   After careful investigation and mature deliberation, the directors decided to retain the old site—to take down the old hospital buildings, and to erect this one in its place.   In January of this year the new hospital was publicly opened, and since then we have continuously occupied it.   Here we have accommodation for about forty patients.   The arrangements are made with a view to occupy only half of the wards at a time.   When once the beds in one floor have been occupied, we leave that flat for the other.   This gives an interval of rest, and thus, by the alternate use of each flat, we have the advantages of a dual hospital under one roof.   About 1,500 feet of cubic space has been allowed for each patient.   You will notice that, by placing the lavatories in a wing off the lobby and jutting into the court, we cut off any possible connection between the drains and the wards.   I might refer also to the improved means for heating and ventilation, to the walls and the flooring, and to the new arrangements as to bedding, but I leave these for your own observation while studying the cases in the wards.   A most important improvement in the internal management of the house has been accomplished.   I refer to the formation of a Committee of Ladies who stately visit the hospital, who look after the domestic arrangements, who see to the wants of the patients and their offspring, and who also care for those of them who are without friends.   Such effective help, combined with the high efficiency with which our nursing arrangements are carried on, give a completeness to the management such as has not hitherto existed.

We meet to-day as students and teachers under very different circumstances from those under which we have hitherto

met. We have now a comfortable lecture room, and you have very superior opportunities for clinical study. Our directors considered it their sacred duty to provide the means for acquiring a good obstetric education as well as to give shelter to the poor. It is your privilege and duty to take the full use of the opportunities now afforded you. Being a practical study, it can only be by the slow but sure result of honest work that you will reach proficiency. Do not seek simply for knowledge sufficient to pass an examination, but study so as to be a successful obstetrician. It is said, "men at some time are masters of their fate." Well, now is your time to realize this saying, for if you do not begin honestly and personally now to observe correctly, to store up precept upon precept, and to be painstaking while studying the details of midwifery, you need never expect to be masters of the art.

I cannot close this address without a reference to the great loss which we, the hospital staff, have sustained through the death of Dr. James George Wilson. From the origin of the hospital his family have held an official medical position in it, his father's name or his own having been upon the staff since 1834. Our late colleague, Dr. Wilson, was a native of Glasgow. He received both his general and his professional education from the institutions of this city. On his graduation in our University in 1853, he joined his father and entered at once upon the active labours of a general practitioner. At that time his father was a much beloved and much respected practitioner, who combined with general practice the special one of obstetrics. Within two years the young doctor was attached to the hospital, and since then, either as an obstetric-physician or as a consultant he retained his connection with it. For many years he has also held the position of lecturer on midwifery in Anderson's College. He was very much trusted as an obstetrician, proving himself to be a very expert operator, and in consequence very much sought after for this purpose in difficult cases. Unfortunately, he was too engrossed with general practice to have leisure for recording observations, hence, with the exception of some brief practical papers, Dr. Wilson did not contribute to the literature of the profession. Still, although his name will not be associated with any improvement in obstetric knowledge, it will long be held in loving rememberance by many in the West of Scotland. The doctor was kind, tender, and gentle. He was thoroughly devoted to his profession, and he retained the love and esteem of his patients in an eminent degree. His death was sudden. It took place while he was preparing to leave the house for

his daily round. He entered upon his rest while still in the prime of life, and as compared with the usual alloted span at a very early age.

CURRENT TOPICS.

LIVERPOOL MEDICAL AND SURGICAL JOURNAL. We learn that the Liverpool School of Medicine is about to be represented by a Journal which is to appear half-yearly. The Journal Committee contains a number of well known names, with Dr. Reginald Harrison as Chairman. The Journal is not entirely a new venture, but is rather a development of the LIVERPOOL MEDICAL AND SURGICAL REPORTS. The Liverpool School has lately been showing considerable vigour, and we welcome this further sign of vitality.

MATHER'S PLAISTERS.—We have received a parcel of these plaisters from the maker, and are able to award them sincere commendation as efficient and elegant preparations. They are handy and cleanly in the highest degree. The surgeon's adhesive plaister spread on india-rubber strikes us as particularly valuable, allowing of application where the movement of the parts would not allow of the ordinary form adhering.

REVIEWS.

Die Furchen und Wülste am Grosshirn des Menschen. By AD. PANSCH, Professor in the University of Kiel. Berlin, 1879.

IT is now a good many years since the detailed anatomy of the fissures and convolutions of the cerebral hemispheres assumed importance in the eyes of biologists generally; and it is even longer since they were elaborately described by anatomists. Foville, Leuret, and even Gratiolet, had written on this subject, and Owen had lectured on its comparative anatomy, before the furor set in which was stimulated by the appearance of

Darwin's *Origin of Species*, when important advances in science were expected by many persons to result from the elaborate comparison of the convolutions in different specimens of mankind, and in apes and monkeys. More recently, in consequence of the experiments of Hitzig, Ferrier, and others, as well as of the investigations of Broca into aphasia, the subject has acquired a greater interest to the medical profession ; and no one will deny the pathological importance which attaches to the association of particular symptoms with lesion of different small areas of the surface of the brain, however great may be the difference of opinion as to the physiological cause of the phenomena.

The hemisphere-vesicles make their appearance each as a unity ; and it is not until later development in the fœtus, nor until in the zoological series we have ascended a notable distance among mammals that the original smoothness of their surface is departed from. The morphological importance, therefore, of the convolutions is not great, and may be very easily exaggerated. It is not easy as yet to make an accurate comparison of these in different orders of mammals. But such a comparison, and all knowledge of the relative importance of different sulci and convolutions, must proceed from the basis of development in later fœtal life, the period in which they make their appearance.

In the brochure before us this principle is thoroughly appreciated. The development of fissures in the human fœtus is that which it is based on ; and, if it be the case, as we have hinted, that it is still desirable to investigate the fœtal condition in different orders of mammals, we are not the less thankful to see certain points in human development given prominence to.

The primary division of hemisphere-vesicle into root and mantle we owe to Reichert. It is a division of the utmost importance, throwing a far-reaching light, as yet too little regarded, on the signification of the corpora striata, and separating decisively the Island of Reil as the superficial indication of that root-part, from all the other elevations. This division Professor Pansch recognises. He then proceeds to distinguish sulci into two sets, the total and the cortical. By total sulci he means those which, in their first appearance, are indicated as elevations projecting into the interior of the ventricles—namely, the *fissura Sylvii, fissura occipitalis, fissura calcarina,* and *fissura hippocampi ;* and it is quite true that those fissures are distinguished both by the character mentioned and by priority of appearance ; in fact, the latter

circumstance partly explains the other. But, turning to the remaining or cortical sulci, the author finds something of the same difficulty which other observers have experienced in subordinating them according to their appearance. However, he distinguishes, we think with considerable justice, four as primary, radiating round the fossa Sylvii—namely, a frontal fissure, the fissure of Rolando, and a parietal and a temporal fissure. He shows that these exist in foetal life before the development of others.

The weak point of the brochure is knowledge of the history of the subject, or at least proper reference to the men who really did the work. We are informed in the preface that this account is only a prosecution of the principles published by the author in 1866, " before the appearance of Ecker's and Bischoff's works;" and at the head of the description of each sulcus and gyrus is a list of the synonyms used by Ecker, Bischoff, Henle, Broca, and Turner. But where is Leuret ? And Gratiolet, where ? These, and Reichert, were the men who did original work in the subject; and they ought to be referred to more prominently than compilers. The term calcarine fissure is mentioned as used by Ecker, Broca, and Turner, but it is not mentioned that the name was invented by Huxley, and that the fissure was perfectly well known at a prior date as that the reverse of which forms the prominence known as hippocampus minor. The important convolutions termed anterior and posterior ascending by Leuret and Gratiolet, Professor Pansch calls anterior and posterior convolutions of Rolando, two perfectly comprehensible names, and much better than ascending frontal and ascending parietal, the names unfortunately bestowed upon them by Turner, apparently by oversight. The division into frontal, parietal, occipital, and temporal lobes, we are glad to see that Professor Pansch makes little of, and practically discards, for it is really unnecessary, artificial, and misleading. If, however, such a division is to be continued, it may be remarked that the boundaries employed by Leuret and Gratiolet are preferable to the innovation which carries back the frontal lobe to the fissure of Rolando; seeing that the fissure in question begins a little in front of the vertex, and reaches little, if at all, in front of the ear. The older names, anterior, posterior, and middle lobes, are more defensible, for they express not accurately limited districts, but three distinct directions of growth from a common centre. We recommend Professor Pansch's pamphlet to those who are interested in the subject of cerebral convolutions.

On the Construction, Organisation, and General Arrange-
ments of Hospitals for the Insane. By THOMAS S.
KIRKBRIDE, M.D. 2nd edition. Lippincott & Co., Phila-
delphia.

DR. KIRKBRIDE, the physician and superintendent of the
Pennsylvania Hospital for the Insane, is one of the oldest
and best known of the American asylum superintendents.
He has held his present office for forty years; and this
volume, which is a revisal of an edition published twenty-
six years previously, embodies his matured experience on
the subjects which have been the study and business of his
life.

American asylums are, with comparatively few exceptions,
erected and maintained by the State, and they receive patients
from all grades of society. In this respect they differ entirely
from our county or district asylums, which, while erected
by the ratepayers, receive only rate-supported patients.
Patients who are able to pay for their maintenance and treat-
ment are not regarded in this country as proper inmates for
a rate-provided asylum; but the American view is quite
different. "It is to be remembered," says Dr. Kirkbride,
"that State hospitals are not for the pauper portion of the
community alone, but for every class of citizens, and that all
who pay taxes aid in their erection, and, therefore, have the
right to participate in their advantages; while, in most of the
States, they furnish the only hospital accommodations for the
care of any portion of the insane. The rich pay most of the
taxes, and those who do so certainly should have the right to
share in the benefits of institutions provided from this source.
And, as cannot be too often repeated, what is right for these
when insane is none too good for the poor when in the same
condition."

There is something to be said for this view, and the recent
agitation for Lunacy Law Reform, moved by a dislike to
proprietary asylums, seems to point in this direction.

But this double function—the care of private as well as
pauper patients—would demand special attention in the con-
struction and arrangements of the asylums. They should
resemble our Royal Asylums in Scotland, and should consist,
like them, of separate buildings for different grades of
patients, who would pay—from their own means or by their
parishes—various rates of board, proportionate to the various
scales of accommodation and maintenance.

Our author has no faith in home treatment, but regards it

merely as time lost, and as imperilling recovery by unduly
delaying proper hospital treatment. All persons becoming
insane should, in his opinion, be sent at once to an asylum.
This view is far too sweeping. There are many cases in
which this course is quite unnecessary, and, therefore, unjusti-
fiable. Many patients recover without requiring asylum care
at all, and undue precipitancy in sending a patient to an
asylum is only a degree less culpable than undue delay, when
such a step is really necessary.

While the high reputation and the thorough efficiency of
his asylum testify to Dr. Kirkbride's remarkable success as a
physician and superintendent, his ideas as to asylum construc-
tion show strikingly how apt we all are to imagine that the
system and arrangements which have worked well in our
hands are the best possible, and cannot be altered without
injury. His views are fully set forth in this volume, and are
embodied in very elaborate plans.

Dr. Kirkbride thinks that an asylum should be a three-
storeyed fireproof building—that it should contain, if possible,
patients of only one sex—that there should be, at least, eight
separate wards on each side, and that these should all be
exactly alike in their construction and arrangements—that
three-fourths of the patients should sleep in single rooms—
that a double row of rooms with a corridor between them is
unobjectionable—that forced ventilation must be secured by
means of fans driven night and day by steam power—that
the house should be warmed solely by steam, and that there
should be no open fireplace in any part of the building except
the kitchen—that all the windows should have wrought iron
guards outside and wire screens within—that large dining
halls are objectionable—and that neither at meals nor amuse-
ments is it desirable that the sexes should meet or enjoy social
intercourse.

The arrangements for carrying out these ideas are complete
and admirable, but the ideas themselves seem radically defec-
tive. It is quite certain that, if it were proposed to erect a
public asylum in this country embodying these ideas, the
plans, when submitted for the statutory approval of the
Lunacy Commissioners, would be at once condemned and
returned for amendment.

The constant endeavour on this side of the Atlantic is to
create in our asylums as much homelikeness and as great
variety as possible, and to banish to the utmost extent con-
sistent with safety all unusual appliances and restrictions. If
our American brethren would work with this as a fundamental

principle, they would be alike astonished and gratified at the results.

The first part of the volume being occupied with asylum construction, the second part is devoted to asylum management. Here Dr. Kirkbride's long experience makes his remarks most valuable, and it is pleasant to find that his views, in nearly all important practical details, so fully accord with those of the best asylum superintendents in this country.

He insists too little on the importance of employment for patients, but it is quite possible to go to an opposite extreme and insist on it too much. While occupation is invaluable, toil is injurious. His remarks on this point are wise and worth quoting:—" Labour in an hospital for the insane should always be regarded much more in reference to the amount of benefit conferred on the patients, than as being pecuniarily valuable to an institution. It must be remembered that all these persons are invalids, labouring under a disease of one of the most delicate organs of the body, and as a consequence often quite incompetent to judge whether they are receiving good or harm from their exertions. Great discretion is requisite to regulate this important department properly and safely."

The value of evening entertainments seems to be much overrated. It is one of the rules of the Pennsylvania Asylum that for nine months in the year there shall be some such gathering every evening. Two evenings weekly are amply sufficient. The insane often derive far more benefit from taking part in games and amusements in their own wards than from merely witnessing formal and provided entertainments.

Restraint by mechanical means and prolonged seclusion of patients in their rooms, our author properly says, " ought both always to be regarded as evils of no trifling magnitude, and to abate which as far as possible no effort should be left untried." Some means of mechanical restraint he, however, deems " essential to the best interests of a very limited number of cases, and more humane than having them controlled by attendants, whose perfect command of their own feelings and actions is not always to be trusted." Such restraint is not required, according to his experience, in more than 1 or 2 per cent of the patients. Even this amount of restraint is not found necessary here; but these are very advanced views to come from America, where restraint is much more used than with us. The cases requiring restraint and benefited by it are very rare and exceptional; but we

entirely agree with our author, that it would be quite wrong to withhold it in these cases, merely because there is a risk that it might be needlessly used in others. The abuse of anything can never be a sound argument against its proper use ; otherwise, stimulants and narcotics would never be again prescribed.

On the classification of patients the opinions given are very extreme. Eight distinct classes of each sex are provided for in the model plan given. This may, perhaps, be to some extent explained by the different grades of society from which the patients are drawn, as well as by their various types of insanity. Dr. Kirkbride remarks, however, "where the sexes are in different buildings there are sixteen instead of eight classes of each, and the classification thus becomes twice as complete as it would otherwise be, and just to this extent improved."

Lunatic wards in connection with poorhouses Dr. Kirkbride utterly condemns, nor will he hear of the separation of chronic from recent cases, nor of the accommodation of the former class in special asylums. His dictum is, " What is best for the recent is best for the chronic. The only chance for the chronic to obtain what is best is to have them in institutions where proper provision is made for recent and supposed curable cases." Of course, if that statement were absolutely true, the question is settled. Perhaps the subject has not compelled attention in America as it is doing in our more densely populated country; but we have learned that a certain class of chronic cases can be quite well accommodated in asylums connected with poorhouses, and that similar accommodation and surveillance on a larger scale can be at once satisfactory for its object, and attainable at moderate cost. Assuredly some mode of providing for the accumulation of chronic and incurable patients must be found, unless county and district asylums are to be indefinitely enlarged and multiplied.

Dr. Kirkbride says that if he were entrusted by a State with the duty of providing accommodation for 600 patients, he would erect two asylums of the same size and plan in different localities. In the one first erected he would place both sexes, and when this became crowded, he would erect the other, and remove the females to it. The first asylum could be renovated when thus half empty, and would thenceforth receive only male patients. Dr. Kirkbride's favourite idea of unisexual asylums would thus be realised, and as this very process was carried out by him at the Pennsylvania

Asylum, " he has no hesitation in pronouncing it, beyond all comparison, the very best mode of providing for five or six hundred patients in one vicinity."

But what is to happen when the State or district demands further accommodation, when some new industry causes a rapid increase of population, or when lapse of years causes such an accumulation of old cases as to exclude new ones? Choose two new sites, apparently, and proceed as before.

These difficulties have arisen so often in this country, that the subject has been receiving much attention of late years.

The history and circumstances of many of our increasing counties or districts, as regards provision for their pauper insane, are unfortunately similar. An asylum is built which seems more than sufficient for all the needs of the district, and for a time it can receive patients from other districts also. Gradually, as each year adds its quota, the incurable cases accumulate. Then the out-district patients are expelled. Then a wing is added here and another there. Then the economic department is found unequal to the unexpected growth of the population, and must be remodelled. Then additional wings are required—until the asylum grows to twice or thrice its original size, is cumbrous and inconvenient in working from the dislocations of its original plan, and is less efficient as a place of cure, since individual treatment has become increasingly difficult, and the new cases are easily overlooked amid a multitude of incurables.

To transfer these incurables to the lunatic wards of a poorhouse is no solution of the difficulty. They are thus merely moved from one asylum to another, and a worse one; and either the one building or the other must be enlarged to meet the growing numbers.

The " boarding out " plan has been strongly advocated, and has been adopted with some satisfactory success. The incurable patient is discharged from the asylum, and, through the agency of the parish officials, is placed as a boarder either with relatives or in the homes of strangers, being still supported by the parish, and under the supervision of the lunacy authorities. The fatal defect in this method is its inadequacy to meet the difficulty. While it answers admirably for some patients, there are many more for whom it would be quite unsuitable; it would be impossible properly and safely to dispose of *even one half* of the incurable cases in this way, even were it possible to find for them trustworthy guardians and suitable homes.

All experience seems to us to prove that every county or district should have two asylums, or rather two types of asylums, for its pauper insane. One of them should be distinctly a hospital, possessing an ample staff of officers and attendants, and equipped with all the best means and appliances for the treatment of recent insanity. It should be central, or easily accessible from all parts of the district. It should receive all the new cases as they arise, and should retain only a sufficient number of old cases to give the newcomers the necessary example of industry, order, and obedience. Its population should not exceed 250 or 300 at most, so that the utmost possible effort may be made for the restoration of each individual patient. Its incurable cases should be drafted off, as they arise, to the other and larger institution. In very large districts, several such cure-asylums would be required near the different centres of population.

The other asylum should be distinctively a home. It should be situated in a country district, and be surrounded by ample lands for spade cultivation and for milk supply. Its central portion should be fitted for infirm and for excitable patients, and the wings should be a series of blocks capable of almost indefinite extension, for the ordinary incurable cases. It should receive no patients except from the cure-asylums. Such a building should be erected at about half the cost per bed of the cure-asylums, and the utmost economy consistent with the welfare of its inmates should be a prominent feature in the administration.

This plan would secure, we believe, at once the greatest benefit to the insane poor and the least expense to the ratepayers. Of course, it does not exclude the boarding-out method, so far as it is found practicable.

Notwithstanding that we differ radically from many of our author's views, we think his contribution to asylum literature a very valuable one, and not least because it proves that efficient administration and admirable results are dependent on no special type of asylum construction. The volume will long be an authority on asylum management, and a repertory of information on asylum details; it will also be a memorial of some arrangements which we hope will soon become obsolete. As a book, it does credit to the publisher, for it is pleasure to read it; its thick toned paper, wide set beautiful type, excellent illustrations, and gilt top suggest an *edition de luxe* of some favourite author rather than an ordinary professional volume.

Diseases of the Throat and Nose. By MORELL MACKENZIE,
  M.D. Lond., Senior Physician to the Hospital for Diseases of
  the Throat and Chest; Lecturer on Diseases of the Throat
  at the London Hospital, &c., &c. Vol I. Diseases of the
  Pharynx, Larynx, and Trachea.

WE have seldom risen from the perusal of a work on medicine
with more pleasure than in this instance. For clear style and
keen close analysis of the whole bearings of each department
of the subject, this book must be allowed to stand in the
highest rank of English contributions to medical science;
while the extensive experience of the author, handled in his
well known candid and independent way, gives the greatest
force to the conclusions arrived at.

It is difficult to select any one subject for criticism where
the level of merit is so uniformly high; but we may refer to
some points in which our readers may be specially interested.
One of these is the question of the relation of croup to
diphtheria. Showing how scattered references to a disease like
it can be found in the older writers (Hippocrates and Aretæus),
the work of Baillou (Paris, 1640) is identified as the first to
give a clear account of diphtheria. Five epidemics are then
traced out, in Italy and Spain, before 1713, when Dr. Patrick
Blair described the epidemic of "*the croops*" at Coupar Angus
—an epidemic which Dr. Morell Mackenzie says was no doubt
diphtheria. Five succeeding epidemics are detected in later
works; and, in 1765, Dr. Francis Home, of Edinburgh,
published a description of an epidemic of "*croup*," which
comes under the same head as the others quoted. In the
latter half of the eighteenth century several further notices
are found; and, in 1802, Dr. Cullen clearly described diph-
theria under the name of *Cynanche Trachealis.* Later on,
Bretonneau and others in France gave excellent descriptions
of *croup*, as it was called there, also terming it *diphthérite.*
Attention then slept for a time as regarded this disease, until,
in 1853, it broke out in Paris again, and soon after that
several great epidemics are recorded, the disease being now a
too familiar guest in our cities. It is clear from this account
of the history of the disease that the names of croup and
diphtheria have been applied to the same disease at different
times and in different places; and we must admit, if we look
at the *post-mortem* results and the history of the cases
impartially, that much of what is called croup at the present
day, appearing under this name in the Registrar-General's
returns, is diphtheria. No doubt cases of simple inflammatory

laryngitis are also called croup, but this only shows how very unsatisfactory this name is. It has a clinical meaning, just as the word cough has, but it should not be applied to a *disease.* It is a symptom and not a separate disease.

Dr. Mackenzie gives a very full and clear account of the symptoms and course of the diphtheritic disease, into which we will not follow him, but no one can fail to benefit by a study of this part of the book.

Under the heading of Granular Pharyngitis the author discusses the use of destroying agents, giving the preference to the London paste as opposed to the actual cautery. We feel sure that, after a fair trial, he will see reason to modify this opinion.

The part which treats of the use of the instruments for examining and treating the throat is singularly clear and interesting: and the various operations on the larnyx are fully and yet succinctly discussed. In every page there is manifest the influence of the ripe judgment of one who has dealt with every form of work from personal experience, while no aid which can be got from other authors is neglected. The resort to removal of the larynx is carefully discussed on the basis of nineteen cases followed out to their issue at the time of publication of this book: and the conclusion is come to that, " In any case the rescue of three patients out of nineteen (15·7 per cent) from certain death must be regarded as one of the greatest triumphs of modern surgery."

Under the heading of the treatment of syphilis of the larynx, the value of inhalations of an atomised solution of bichloride of mercury (1 in 1,000 or 500) is recognised. Syphilis of the trachea receives a short description at p. 532, especially in its tendency to cause stenosis: the treatment of which latter condition is also cautiously weighed, in view of the fact that in certain cases the contraction extends along a considerable length of the trachea.

We regret that want of space does not permit us to follow the author in more detail through the other divisions of his subject, but we feel sure that our readers will derive both pleasure and instruction from the study of the book for themselves.

The second volume is announced for publication in a few months, and in it the diseases of the œsophagus, nasal cavities, and neck are to be described. We shall await its appearance with pleasurable feelings founded on the gratification afforded by the volume now before us.—D. F.

Atlas of Skin Diseases; Part VIII.   By L. A. DUHRING, M.D.
  Philadelphia: J. B. Lippincott & Co.   1880.

WE have already, on several occasions, expressed our high
appreciation of this excellent Atlas, and are glad to have
another opportunity of recommending it.   The four subjects
chosen for illustration in this part are the papular variety of
erythema multiforme, affecting the knuckles and back of the
hands; syphiloderma tuberculosum, a late and tolerably fam-
iliar manifestation of syphilis; tinea tricophytina (circinata
et tonsurans) and psoriasis, both in a typical and characteristic
form.   These plates strike us as being truthful and artistic;
and we say all that is necessary in their favour when we state
that the high standard of excellence attained in former num-
bers is fully maintained in this.

Tables of the Physiological Action of Drugs.   By E. A. Mors-
  head, M.R.C.S., L.R.C.P.   London: H. K. Lewis.   1880.

THIS little work consists of a series of tables which "have been
compiled almost entirely from Dr. Wood's work on *Therapeu-
tics,*" with the addition of a few items taken from Rutherford
and Ringer.   It deals solely with the physiological, and not
the therapeutical actions of drugs; but as the therapeutical
employment of a remedy is now so frequently based on its
known physiological action, hints having a direct bearing on
treatment may often be obtained from these tables.

Ringworm: Its Diagnosis and Treatment.   By ALDER
  SMITH, M.B. Lond., F.R.C.S.   London: H. K. Lewis.   1880.

THIS work, which is an elaboration of some letters which
appeared some time ago in the *Lancet,* is the outcome of the
author's extensive experience of ringworm, chiefly among the
children of Christ's Hospital, London.   With the temptation
before him to make too much of his subject, a temptation which
few specialists seem able to resist, it is to the writer's credit that
the account which he gives of ringworm is concise and prac-
tical, and tolerably exhaustive without being overweighted
with detail.   The object specially kept in view is the dis-
cussion of treatment by the artificial production of kerion,
"Nature's method of effecting a cure," but the work in its
whole extent is one which will well repay perusal.   The ease

with which disseminated ringworm may be overlooked, the difficulty experienced in curing it, and the care which should be exercised before pronouncing a case of ringworm to be well, are some of the points which receive due emphasis. In disseminated ringworm the hair has grown again on the patches, but, on close inspection with a lens, some scurfiness, with many broken hairs or stumps, may be seen scattered among the healthy hairs. " Medical men should not certify a child free from ringworm, unless they have most carefully examined the whole scalp in a good light, and scrutinized any suspicious spot with a lens, and are certain that there is not to be seen a single stump (or even the black dots before mentioned), giving evidence of the fungus under the microscope." " A bald patch should therefore never be considered well until the new downy hair is growing freely, without a single stump or black dot among it."

But it is as regards the question of treatment that this brochure professes to be specially strong. The author, while in the main he seems to treat ringworm pretty much as other people do (recommending hair cutting, shaving, blistering, epilation, the use of parasiticides, &c.), has most to say in favour of three external applications, namely, a preparation of carbolic acid and glycerine, a compound citrine ointment (composed of citrine and sulphur ointments and carbolic acid), and croton oil.

The use of croton oil for the artificial production of kerion the author recommends as an imitation of the curative action of nature ; it is not applicable in those cases in which the disease involves a large extent of surface, but only to small inveterate patches of chronic ringworm, especially such as have been marked out and reduced in size by other treatment. The oil is painted daily, for 3 to 6 days, on a patch not larger than a shilling, poultices being applied at night. The part becomes tender, swollen, and boggy, the hairs and stumps are loosened in the follicles and easily extracted. Under soothing treatment the irritation soon subsides, when the disease is found to be cured. Croton oil employed in this way is certainly a powerful and effectual remedy, but it must be used with great circumspection, especially when dealing with young children ; indeed for children under eight or ten it seems hardly suited.

We commend this little work more particularly to the attention of busy, general practitioners ; it discusses an affection which they are rather apt to treat lightly at first, but which they are often ultimately disgusted to find so obstinate and

troublesome. If what is here set forth were more generally known and practised, fewer of these cases would find their way into the hands of specialists.

WE have received a note from Dr. Hart, taking exception to some remarks made in a review of his work on *The Female Pelvic Floor*, which appeared in our last issue. The Reviewer pointed out that in Plate I of that work the peritoneum is represented as running " from the fundus of the bladder *not* to the anterior surface of the cervix uteri," as described in the text, " but down behind the bladder, as far as half way along the anterior vaginal wall. Thus the vesico-uterine pouch is represented as the deeper one." Dr. Hart objects that a mistake has been made by the Reviewer, as he has taken the representation of the loose tissue behind the bladder for that of the peritoneum, although Dr. Hart admits that the plate is " objectionable" and " misleading" on this point. These expressions, which we have quoted from Dr. Hart's note, admit all that was meant in the review, and, having re-examined the plate, we must still assert that a mistake has been made by the draughtsman, although the mistake may be corrected by a careful perusal of the text, and by an examination of figures 14 and 20. These remarks will not be understood to detract seriously from what has been already said as to the high merits of the work as a whole.—[Reviewer of Hart's work on *The Female Pelvic Floor*.]

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

WESTERN INFIRMARY.

REPORTS UNDER THE SUPERVISION OF DR. W. G. DUN.

FROM PROFESSOR GEORGE BUCHANAN'S WARDS.

CASE OF TRACHEOTOMY FOR REMOVAL OF AN INDIAN CORN SEED IN THE TRACHEA—CURE. [Reported by Mr. John M. Young, M.A., House Surgeon.]—The patient, a boy, aged 3, was brought into the hospital on the morning of 14th May.

with symptoms which pointed very clearly to some obstruction of the large air passages. According to the statement of his father, the boy, on the preceding day, had got possession of some Indian corn, and while running about and laughing with his companions, had put one of the grains in his mouth and accidentally swallowed it. It at once became apparent, from the appearance of the boy and his struggles for breath, that the corn had entered the air passage. The parents, however, did not think of seeking medical aid till twenty-four hours had elapsed after the accident.

When admitted, the patient was stripped and examined. The dyspnœa was not urgent, but the parents declared that, during the night, he had had frequent fits of spasmodic cough. His respirations were long, slow, laboured, and noisy, all the accessory respiratory muscles being brought into play, and the lad himself aiding the act by keeping his arms out from his sides.

The stethoscope gave no aid whatever, and, from the appearance of the boy, it was impossible to say at which part of the air passages the obstruction existed. But two powerful efforts at inspiration caused the intercostal spaces and the costal cartillages of the false ribs to be sucked in—plainly evidencing that the trachea was obstructed by a foreign substance which would soon produce suffocation. Dr. Buchanan at first thought of holding the child suspended by the feet, with the head down, in the hope of shaking out the seed; but, considering that it must have swollen by softening, and so become impacted, and fits of dyspnœa coming on which rendered the child's face turgid and blueish, he at once carefully cut down upon the trachea in the usual way and made an opening into it. A tube was inserted, but it became evident that the dyspnœa was in no way relieved, but rather increased, and that the obstruction must be farther down, probably at the bifurcation of the trachea. The tube was then drawn out again, and in a few moments there was a sudden explosion of air from the opening, and the Indian corn—the origin of the evil—was shot out along with a good deal of mucus.

The tracheotomy tube was then tied in, and the lad, whose breathing seemed now by comparison quite tranquil, removed to a warm room.

Everything went on quite well, and on the 16th May, two days after the operation, the tube was removed and the boy allowed to breathe through his mouth. On the day succeeding his mother took him home.

COMPOUND DEPRESSED FRACTURE OF SKULL : ELEVATION AND REMOVAL OF FRAGMENTS : CURE.—W. M., aged 7, was admitted into the hospital on the morning of 30th March, with a large punctured fracture of the skull. A chimney, which had caught fire in the street where he was in the habit of playing with other children, arrested his attention, and while looking up at it, the can suddenly·cracked and a portion of it fell from the roof upon his head. The lad never lost consciousness for a moment; and, it may be mentioned here, that no head symptoms whatever have since developed during the course of treatment, nothing of an abnormal character, over and above the injury itself, except symptoms of slight shock during the first day or two, having at any time been observed.

On admission a large scalp wound and depressed fracture were found over the back part of the left parietal region. The scalp wound, about an inch and a half long, was irregular and gaped considerably. On probing with the finger the bone was found to be depressed and comminuted, though the pieces were firmly wedged together and all depressed. When a stream of carbolic acid solution was injected, it came away mingled with a little white curdy matter, like brain substance.

Dr. Buchanan next day, to prevent all chance of secondary inflammation, decided to remove the depressed pieces. He, therefore, after having the entire head shaved, enlarged the scalp wound, and with some difficulty, by means of an elevator, raised up the pieces of bone, whose bevelled edges were found to have been pushed underneath the ring of sound bone. One large piece and other five smaller ones were thus removed, and a considerable surface of brain exposed. The appearance of the pieces demonstrated how much more severely the inner table had suffered than the outer, the inner table of the largest piece measuring an inch and a quarter across, the outer table only three-quarters of an inch.

The wound was dressed with antiseptic precautions. At each successive dressing the brain substance was observed to be gradually rising upwards, so that at length it protruded from the wound, the area of the protruding portion (a greyish red pulsating mass) being in size and shape like half a walnut. To keep back this hernia, a circular piece of cork, quarter inch thick, and rendered first thoroughly antiseptic, was tightly bandaged over it, underneath the dressings. This method of treatment has been quite effective. Now (May 19th), only a small area of brain substance is seen pulsating slightly beneath the general surface, while the edges of the wound around it are rapidly encroaching upon the gap.

FROM DR. PATTERSON'S WARDS.

(*While temporarily under the Charge of* DR. KNOX.)

POPLITEAL ANEURISM. [From notes supplied by Mr. Downie, House Surgeon.]—J. C., æt. 24, a labourer, was admitted with a large diffused aneurism in right popliteal space. Ten days previously he had been working among some casks, and on jumping to the ground from the top of one of them, he felt a sudden pain in his right knee. This pain extended gradually to the foot, and was especially severe when patient was in bed. On admission, an aneurismal tumour was found filling the entire popliteal space, and measuring about 3½ inches in length; it had a tense elastic feel, and apparently very thin walls. The patient was very restless, and from the difficulty of lying in bed, his symptoms were aggravated by his constantly moving about. As he complained loudly of the pain, and as the tumour was growing larger with great rapidity, its increase being quite manifest during the few days which elapsed before operation, it was decided to ligature the femoral in Scarpa's triangle. This was done on the 23rd April, the ligature used being Lister's chromicised catgut, kindly furnished by Dr. J. G. Lyon. The wound was dressed antiseptically, and the greater part of it healed by first intention. Three weeks after the operation the patient was quite well, and the tumour in the popliteal space had almost entirely disappeared.

RADIAL ANEURISM.—E. T., æt. 28, presented himself at the hospital with an aneurism rather larger than a boy's marble, over the radial artery. Three weeks previously he had been filling soda water bottles, when one of them burst, and cut his forearm on the radial side at the junction of the lower and middle thirds. The wound had been dressed and the bleeding stopped, according to patient's account, by ligature of some vessel. Healing took place rapidly, but shortly afterwards a small painful swelling appeared beneath the cicatrix. This increased with considerable rapidity. Its connections were readily made out. On pressure over the tumour it could be completely emptied, and by directing pressure on the artery above and below the tumour, it could be kept empty. Pressure, however, on the artery, when only applied above the aneurism, had no effect on its pulsation. Dr. Knox thought that the side of the radial artery had only been cut by the bottle and that a cicatrix had formed, which had yielded to the pressure, so forming the aneurism. The radial artery was tied above and below the aneurism. The wounds were dressed antiseptically, a small splint applied, and the patient allowed to go home.

16th May.—The wounds were dressed to-day with boracic lint. Absorption of the contents of the tumour is going on slowly, and its size is slightly diminished. There is no return of the pulsation or pain.

SCIRRHUS OF MAMMA.—Mrs. M'K., æt. 44, was admitted 22nd April, 1881, with a small cancerous tumour in left breast, immediately below the nipple. The skin of the breast showed a small patch of an eczematous character almost surrounding the nipple, but with a hard base, which was continuous with the nodular hardness of the tumour below. This eczema had lasted for about six years without causing any discomfort beyond a sensation of heat in the part. About a year ago, patient felt a small hard nodule about the size of a pea behind the nipple, which has since grown slowly, causing severe pain and retraction of the nipple. One or two glands in the axilla are slightly enlarged. Patient had two aunts, one on the paternal and the other on the maternal side, both of whom died of cancer of breast. On 26th April the breast was removed along with the enlarged glands. Microscopic examination proved the tumour to be a typical hard cancer.

16th May.—Patient is now able to go about the ward, and will leave the hospital in a few days.

ACUTE SCIRRHUS OF MAMMA.—In striking contrast to the last case was the following:—Mrs. P., æt. 46, was admitted on 15th April with a large tumour in right mamma. She stated that it had commenced about seven weeks before, and was rapidly growing larger and more painful. The skin over the tumour was of a dusky red colour, much thickened and infiltrated, and adherent to the mass below. The tumour itself was rather soft, but very heavy and nodular. There was a large mass of enlarged glands in the axilla, but no cachexia. Altogether, the case was about as bad as it well could be, and operation was at first refused. Yielding, however, to the woman's urgent entreaties to do something for her, Dr. Knox, after consultation with a colleague, agreed to operate. The breast, with as much skin and cellular tissue as possible, was removed by incision, and a mass of glands as large as an orange was dug out of the axilla. The patient lost a considerable amount of blood, but notwithstanding, under antiseptic dressings, the wound healed up without a bad symptom. In three weeks the patient was dismissed to her home well as regards the wound, entirely free from pain, and much relieved in her mind.

MEETINGS OF SOCIETIES.

GLASGOW SOUTHERN MEDICAL SOCIETY.

Session 1880-81.

Meeting X.—10th March, 1881.

Dr. T. F. Gilmour, *President, in the Chair.*

Professor M'Call Anderson read a paper on deviations from the normal arterial tension associated with certain diseases of the kidneys and heart, and their treatment.

In estimating the state of tension of the pulse, which is full, strong, resisting, and prolonged when the tension is high, and weak, compressible, and often dicrotic when it is low, he pointed out that we must not be guided by the volume of the pulse, which may be large or small in either case.

He remarked also that, in his opinion, the chief value of the sphygmograph at the bedside was to enable us to guage the degree of tension, and to register from time to time its variations more accurately than can be done with the finger.

High tension is to be relieved by removing the cause. Thus, in acute Bright's disease, it is principally due to diminished excretion of water; and, accordingly, if we succeed in inducing profuse urination, the high tension as well as the other symptoms disappear. This was illustrated by the case of a little boy, æt. 14, whose only treatment consisted in the administration of oceans of skimmed milk, which, in two days, raised the amount of urine passed from 40 up to 224 ounces, and within a week the high tension and all the other symptoms had disappeared.

In chronic Bright's disease, on the other hand, there is often excessive urination, and yet the tension is high, the cause being the stop-cock action of the arterioles throughout the system on the one hand, and the over-action of the frequently hypertrophied left ventricle on the other. In too many cases, unfortunately, we are unable to remove the chronic disease of the kidney, but yet we can often diminish the tension, and thus may avert threatened complications—cerebral hæmorrhage, for example. This is to be done—

1st. By stimulating the organs of excretion.

2nd. By the administration of medicines which directly lower the tension.

The latter are of use, not only with the view of controlling kidney, but also heart complications, such as angina pectoris. The medicines are :—1st. *nitrite of amyle*, which is usually given by inhalation, three or four drops being put upon a handkerchief, and which, as is now well known, lowers the tension and controls angina pectoris. Illustrations were also given of its influence in arresting threatened attacks of ague, and hysterical epilepsy.

2nd. *Nitroglycerine*, which acts more slowly than the former, five or six minutes elapsing before its physiological action is at its height, but which is probably more permanently beneficial. The influence of this drug was well illustrated by the case of a gentleman, who had angina pectoris as a complication of fatty heart, and who received permanent benefit from it. The preparation used was a 1 per cent solution in spirit; the dose being from one, cautiously increased up to fifteen drops every three hours; but latterly the angina could be controlled by a dose of two or three drops when a paroxysm threatened.

On the other hand, *when the tension is unduly low*, this may sometimes be rectified. 1st. By support and stimulation; and 2nd. By the administration of medicines which directly raise the tension. These are *digitalis*, whose influence in this respect is so well known as not to require further mention, and *casca*.

A very striking illustration of the influence of this drug was given :—That of a patient, with dilatation of the heart, following upon aortic valve disease, and which had led to passive congestion of the lungs, liver, and kidneys, with very scanty urination, albuminuria, and extreme dropsy. The preparation used was the tincture of the strength of 1 to 10, and the dose was from 5 to 10 minims three times a day. Within a week all the symptoms resulting from failure of the heart's action had disappeared.

In concluding, Dr. Anderson pointed out that we had in nitroglycerine a valuable rival to nitrite of amyle, and the tinct. of casca stood in the same relation to tinct. of digitalis.

Experiments on Tuberculosis.—In the *Centralbl. f. Chir.* for 19th March, there is a review of a work published recently in Stuttgart, by M. Schüller, on *Experimental and Histological Researches on the Origin and Cause of Scrofulous and Tuberculous Diseases of Joints, with Studies in Tuberculous Infection and Therapeutic Experiments.* The following is a brief summary of the results obtained in experiments with rabbits. Contusion of a joint is followed by tuberculosis or pulpy inflammation of the joint, when there is introduced into the lung (by a tracheal wound), either powdered human lung, tuberculous sputa, caseating gland tissue, granulation from recently excised joints, or fresh lupous tissue. (It is not expressly stated that the lung or granulation tissues from joints were tuberculous, but it is distinctly implied that they were so.) Contusion of the joints of healthy animals had no evil results, except in two animals that were kept beside tuberculous ones, and contracted tuberculous disease presumably through breathing infected air. Blood taken from tuberculous animals immediately after death proved infective, whether introduced into the lung, as above, or injected directly into the joint. The specific affection of the joints was invariably followed by general tuberculosis if the animal was allowed to live.

The distinctly local action of the poison tells strongly in favour of the theory that the poison is a particulate one, and not a soluble virus. The author claims to have demonstrated this by fractional cultivation of the above mentioned substances in suitable media. He found abundant bacteria, of a special form, which he describes, quite different from those of ordinary putrefaction; in fact, he found that the presence of the latter destroyed the action of the "specific" bacteria. Injection of the cultivated bacteria was followed by the same results as that of the fresh material. Changes observed in the blood were swelling of the red corpuscles; frequent occurrence of colouring masses of swollen, softened, white corpuscles; and the appearance of numerous micrococci, some floating free, others adhering to the white corpuscles.

In the joints examined after death abundant micro-organisms were found in and on the blood-vessels, in the synovial mem-

brane, in the lymphatics, in the cartilage cells, and sometimes in the bones. In the lungs tubercles were found, besides caseating masses, and more recent foci of desquamative pneumonia. Here, too, micrococci were found in the peri-bronchial connective tissues, also forming thrombi in distended capillaries, and in the tubercles and caseous masses. They were also found in the liver and kidneys.

Schüller holds that the discovery of these organisms explains (1.) How it is that tuberculous disease can remain for a long time latent in a joint or other organ, and how more extensive dissemination of the disease in other organs may follow the establishment of freer circulation in the part or "fluxion to other organs," by removal of the organisms from the primary focus. (2.) Spontaneous cure may be explained by the occurrence of conditions unfavourable to the further development of the organisms (*e. g.*, exhaustion of pabulum), or by rapid elimination. (3.) Beneficial therapeutic effects may be expected from such agents as are proved by experiment to prevent development of bacteria.

These are merely a few of the points touched upon by the author. The experiments are interesting, but in them and in the conclusions drawn there are many assailable points which the reviewer (Dr. Riedel, of Göttingen), does not fail to point out.—D. M'P.

Action of Chloroform, Ethidene, and Ether compared.

—In a "special article" in the *New York Medical Journal* for May, 1881, Dr. Gaspar Griswold, of New York, thus compares the effects of these anæsthetics :—*Clinical.*—1. The dose (administered on a towel) is greater with ethidene than chloroform ; the time required to anæsthetise the patient is longer with chloroform. 2. Vomiting is equally frequent in the case of both agents, but is more protracted in that of chloroform ; this symptom occurs independently of the duration of anæsthesia or the quantity of anæsthetic administered. 3. With both agents the pulse is retarded and fails, while the respirations become more frequent ; these changes are more frequent and more marked with chloroform. *Physiological.*—1. Chloroform and ethidene, in animals, reduce the blood pressu ⌐ decidedly—chloroform more rapidly and more decidedly ; eth. does not affect the blood pressure unfavourably. 2. Chloroform may reduce the blood pressure suddenly and apparently capriciously ; ethidene has not been observed to do this. 3. In one instance, artificial respiration restored a dog whose heart had stopped beating, for a considerable time, from the effect of chloroform ; it is therefore an efficient means of resuscitation.

4. Ethidene seems much safer than chloroform; in no instance has the heart or respiration, though sometimes much reduced, stopped entirely during its administration.   5. Chloroform affects the pulmonary circulation most; ethidene next; ether least.   6. The quantity of air and the time required to restore the circulation in the lungs are in inverse ratio to the amount of anæsthetic vapour and time necessary to stop it.   7. The changes produced in the lungs are the same in all, the only difference being in the rapidity of their occurrence; these changes are: (1) retardation and ultimate stoppage of the circulation in the lungs, first in the capillaries, then in the arterioles, etc.; (2) the epithelium cells and their nuclei disappear; (3) the capillaries contract, their walls become less distinct or disappear, and the contained corpuscles disintegrate. *Practical.*—1. It is necessary to remember that frequency of the respirations denotes heart failure, and that diminished blood pressure may show itself by respiratory failure from anæmia of the medulla.   2. It is essential that the possibility of chloroform and ethidene—especially chloroform—reducing the blood pressure suddenly, even after their administration has been stopped for some little time, should not be lost sight of.   Artificial respiration should be continued, even though all evidence of cardiac action has ceased.   3. As regards comparative danger, the order is: chloroform, ethidene, ether; as regards facility of resuscitation, the order is inverted: ether, ethidene, chloroform.   4. The danger with chloroform is silent and sudden, approaches from the cardiac side, and is difficult to meet; the danger with ether is noisy and progressive, approaches from the pulmonary side, and may be efficiently warded off by artificial respiration.   Ethidene resembles chloroform, but is less dangerous.   [It is to be observed that these conclusions are essentially reproductions of those of the Glasgow Committee of the British Medical Association.]

The Death Smell.—Dr. A. B. Isham, Professor of Materia Medica and Therapeutics in the Cincinnati College of Medicine and Surgery, calls attention, in the *American Journal of the Medical Sciences* for April, 1881, to the peculiar *ante-mortem* odour encountered in many cases at a variable period before the fatal result; in one case he noticed it thirty-three hours before death.   The smell is analogous to musk, but is rather more pungent and less diffusible.   He is inclined to attribute the phenomenon to the liberation of ammonia, and of the peculiar volatile oil (fatty acid) which gives the blood its odour; this liberation being caused by the diminishing vitality of the blood.

Sulpho-cresylate of Soda as a Purgative.—M. Rabuteau has reported on the excellent purgative action of sulpho-phenate of soda, which produces seven or eight easy motions in the day. Sulpho-cresylate of soda can be substituted for the above, as the action of the two salts is precisely similar. The latter is a white salt with a slightly saline taste, and with a distinctly sweetish after-taste. Like phenic acid, cresylic acid is obtained from coal tar by distillation. It is often contained in the phenic acid of commerce.—*Journal de Thérapeutique.* 25th March, 1881.—J. W. A.

The Application of Electricity During and After Labour.—M. Apostoli, believing that the arrest of the involution of the uterus is a great cause of metritis and engorgement of that organ, proposes, and has employed as a prophylactic, the application of electricity either by the Faradaic or induced current. It is employed at intervals during labour and eight or ten times in the six days following a normal confinement, or fifteen to twenty times for ten or fifteen days after a miscarriage or a difficult labour. Of 32 cases under observation during 'the last two years, 11 were miscarriages, and in 21 labour occurred at the full time.

M. Apostoli summarises his conclusions thus :—

1. Faradisation of the uterus is always perfectly harmless.

2. It is always soothing and sedative in its action.

3. Faradisation shortens convalescence considerably by hastening the contraction of the uterus, which cannot be felt, even by deep palpation, above the pubis on the sixth or eighth day in general.

4. The return of the regular uterine functions is accelerated.

5. Faradisation protects the mother from all the uterine complications which are the result of her accouchement.

6. Faradisation is the true preventive treatment of uterine displacements following confinement, such as retro- and anteflexion.

7. It appears to lessen the lochial discharge.

8. Under the same electric current the uterine contractility is very variable.

9. The action of Faradisation on the uterus, compared with that of ergot, is very prompt and energetic. M. Apostoli proposes its employment after every confinement.—*Gazette des Hôpitaux.* 21st April, 1881.—J. W. A.

The Physiology of the Visual Purple.—In the May number of the *New York Medical Journal*, Dr. William C.

Ayres concludes a series of articles on the visual purple. We know, he says, that the purple is a photo-chemical substance which is sensitive to light, and that its seat is in the outer segments of the rods, whereas it is never found in the cones. The cones, on the other hand, being the only elements found in the fovea centralis, we are forced to the conclusion that distinct vision, both for objects and for colours, is independent of its existence. In the higher classes of animals it is sensitive to light, but in some deep-sea fishes—cephalopods, &c., it has its seat in the rods, but is no longer sensitive to light, although it has the same colour as before. In another variety of fishes —the black fish, for instance, it is purple in colour, but resides in the slender offshoots of the pigment cells which run in between the rods and cones. Where it is not sensitive to light, the optical structure of the eye is very defective, and any benefit of a sensitive compound would not be appreciated, and it therefore does its work as a stable pigment. It is an *albuminoid compound,* and is a *secretion of the pigment epithelial cells of the retina,* but *this secretion is not controlled by any one of the larger nerve trunks* which have a part to play in the functions of the eye. We know of no drug which can diminish its secretion, but *pilocarpine and muscarine greatly increase it.* We know that a solution of the purple does not destroy the most chemical rays, as those of the violet and ultra-violet light, but, on the contrary, the yellow, which is not so deep in colour as the purple, cuts off these waves completely. We know also that when the purple is in excess in the retina there must be the greatest chemical effect possible, and that if the light come into such an eye it can not see or is overpowered. Thus, when the eye has been for a long time in the dark and comes into the light, it is dazzled. Again, when the yellow is in excess, there is a minimum of chemical effect capable of being produced in the retina, and the eye does not see either, as when we pass from a bright light into a darker room. *The purple is a conservative compound which is placed in the eye as a matter of protection,* and which enables it to perform its duty under the most varied circumstances. In eyes which are not subjected to such variations, it is no longer sensitive to light, but it preserves all of its other characteristics. The idea of using it for medico-legal purposes is impracticable.

True Ozæna and its Treatment.—There are two perfectly distinct varieties of ozæna. In the first, the submucous osseous framework of the nose is destroyed either by

syphilis, scrofula, or disease of traumatic origin; this variety occurs less frequently, and is accompanied by a much less disagreeable odour than the other. True ozæna includes those cases in which there is no osteal or periosteal lesion; in it the mucous membrane, when denuded of adherent crusts, is found to be almost intact, only slightly reddened, scarcely inflamed, thinned, and less vascular or velvety than usual. This thinning of the membrane is characteristic, and can be detected by the probe, which seems to come almost into direct contact with the bone. The nose is often blocked by greenish fœtid crusts, which the patient has great difficulty in expelling by blowing. These crusts may reach down to the pharynx and press on the soft palate. The patient sleeps with the mouth open, suffers constantly from headache, nausea, distaste for food, and prolonged malaise. The manner in which this condition is developed is revealed on making a rhinoscopic examination. The nasal cavities are invariably found to be enormously dilated, forming a veritable antrum with no central constriction; the septum is visible along its whole extent, and sometimes also a portion of the posterior pharyngeal wall and the pharyngeal orifice of the Eustachian tube—a state of matters very different from that which characterises the normal condition. The lower turbinated bone is usually also rudimentary. These features suggested to Zaufal the theory which is now very generally accepted regarding ozæna. According to him, inspiration takes little part in the removal of mucus from the nose; expiration, on the contrary, sweeps it horizontally forward to a more sensitive portion of the mucous membrane, where its presence excites the desire to clear the nose of obstruction. The inferior turbinated bone, besides narrowing the passage, accelerates and directs the current of air; when these bones are small and rudimentary, and the nasal cavities abnormally wide, the current of air has not sufficient force to carry the mucous secretion forward, so that the discharge accumulates, dries into crusts, and decomposes—whence the odour described. So long as the accumulation is present the odour persists; when that is cleared away the odour disappears for a time. Zaufal's views are confirmed by what happens after the removal of large nasal polypi, when it is not unusual to have slight ozæna for a time till the nares resume their normal volume.

The method of treatment which M. Terrillon advocates, and describes as very successful, is based on the foregoing theory of origin of the affection. It consists first of thorough irrigation of the nasal cavities, with a weak solution of

common salt, once every two or three days, or as often as twice a day if necessary; and secondly, the insertion of a plug of cotton wool into each nostril, in such a way as to give the nares somewhat their normal conformation internally, and thus to remove the cause of the decomposition of the mucus. The cotton should be wrapped round the end of a knitting needle so as to form a plug the length of the nasal fossa, *i. e.*, about 5–6 centimètres long; it should not be thicker than a penholder. The plug is then passed into the nose, being directed along its outer wall, pointing towards the outer angle of the eye, and thus taking the place of the inferior turbinated bone. When the plug is in place the needle is easily withdrawn. This plug should be renewed every two or three days, and is easily expelled by irrigation. The patient soon learns to apply it himself. Soon after, the mucus which comes from the nose will be found to be liquid, not fœtid, and in its usual normal condition. This method of treatment, so long as it is faithfully carried out, keeps the affection effectually in check; but if it be neglected, even for a short time, the ozæna returns. As a rule, patients will not object to the trouble which it involves, as the manœuvre is simple and easy, and the infirmity from which it relieves them is a very disagreeable one, both to themselves and their neighbours.—*Bull. Gén de Thérap.* 30th April, 1881.

Resorcin in Malarial Fevers.—Dr. O. Kahler has employed resorcin in several cases of intermittents, with good results. He gives three instances in which the affection was cured by the administration daily of 3 to 4 grammes of resorcin in 150 grammes of water. The spleen also was lessened in size. It seems certain also that a small dose of this remedy taken at the commencement of an attack renders it much less severe, a circumstance which is perhaps due to its great solubility and ready absorption; the temperature does not rise so high, the concomitant symptoms are milder, the shivering less prolonged, the moist stage less disagreeable,—effects which quinine does not produce in similar conditions. Its administration by rectum is less painful, more rapid, and more certain than the hypodermic injection of quinine, while the consecutive phenomena are not more disagreeable. Treatment by this drug is cheaper than by quinine.—(*Paris Médical.*) *Bull. Gén. de Thérap.* 30th April, 1881.

The Permanent Nasal Inhaler.—At a recent meeting of the Therapeutical Society of Paris, M. Dujardin-Beaumetz

exhibited Feldbausch's apparatus bearing the above name. It is made of celluloid, and consists of a pair of short tubes connected by a bent wire and placed entirely within the nostrils. Within the tubes is a piece of flannel or absorbent paper, which may be moistened with solutions of carbolic acid, Peruvian balsam, essence of eucalyptus, turpentine, &c. The tubes are made in various forms to suit differently shaped nostrils.—*Bull. et Mém. de la Soc. de Thérap.* 15th May, 1881.

Treatment of Aphthous Vulvitis.—Under the designation *aphthous vulvitis*, Dr. Parrot describes the affection usually known as infantile vulvitis, which is occasionally complicated by gangrene of the parts. He finds that in the treatment of such cases nothing equals iodoform in powder, which should be applied in a thick layer, by means of a camel's hair pencil, without previous washing or the adoption of any other precaution, the labia being kept apart by means of lint or cotton-wool. This is repeated every twenty-four hours till the cure is complete. The author states that the rapidity with which the affected surfaces begin to assume a healthy appearance is surprising.—(*Rev. de Médicine.*) *Bull. Gén. de Thérap.* 30th April, 1881.

Vasculo-cystic Goitre treated by Electrolysis.—Dr. Henrot, of Rheims, has used the electric current successfully in the treatment of a goître of the "vasculo-cystic" variety. The patient was a young woman of 20. At the first *séance* a current from 30 elements of Gaiffe's apparatus was passed for five minutes, the negative pole being introduced into the right lobe of the swelling, the positive into the left: the needles were of platinum. At the second sitting, 24 hours after the first, the proceedings were in all respects similar, except that a capillary trocar was introduced into the tumour, and the needle constituting the positive pole was passed through the cannula. Ten days afterwards, at the third sitting, two cannulas were used, one for each pole; in four days more the patient was dismissed much improved. The author thinks that electrolysis by means of these cannulas has several advantages: it evacuates the fluid of the cyst; it determines the coagulation of the blood in the vascular parts of the tumour; it provides an orifice for the escape of the gases developed by the chemical decomposition of the fluids, a point of some importance when employing currents of such strength (30 elements); it favours the formation of a solid clot by the abstraction of the albuminous and frothy fluid, which is

much more abundant than usually imagined ; it tends to prevent the formation of little emboli, by facilitating the rapid development of a large fibrinous clot.—*Bull. Gén. de Thérap.* 30th April, 1881.

Transplantation of Muscle and Tendon.—Two series of experiments by T. Gluck are described in the *Archiv für Klin. Chir.* Bd. xxvi.

In the first series, gaps (the size of a 5 mark piece) in the muscles of hens were filled up with pieces of muscle of rabbits. These healed without exception, the structures remaining united.

In the second series, part of hens' gastrocnemii were cut out and replaced by corresponding pieces from other hens. These healed also. Forty days after the operation the muscle recovered its power. Energetic regenerative action in the transplanted tissue only appeared when inflammatory reaction was quite eliminated. If inflammation to any degree occurred, the transplanted piece became more or less transformed into a fibrous mass, or the whole muscle became semifibrous. *Centralbl. f. Chir.* 19th March, 1881.—D. M'P.

To what extent are Utero-Vaginal Injections advisable in Childbed? By W. J. Surgley, M.D. Dub.—This paper was read before the Dublin Obstetrical Society and created a good deal of discussion.

The dangers likely to accrue from such injections are first considered, these being—1. Severe pains and convulsions from the shock of the uterine injection being present, even where the antiseptic used was only one per cent in strength, so that it could not be the cause of the alarming condition. A case is mentioned which terminated fatally after one such injection, which leads to the conclusion of Leroux, in the end of last century, that a thrombus had been displaced. 2. Over-distension of the uterus may also occur, and this leads to severe pain and may induce inflammation. Another danger (3) is the possibility of infecting a patient with a syringe not thoroughly cleansed, and, to obviate this, an ordinary double catheter of vulcanite is recommended. Experiments with reference to the action of carbolic acid are referred to, and the author seems to recommend carbolic acid as the least harmless antiseptic if properly employed.

Dr. Atthill, in the course of his speech, pointed out that in his experience he had found injections of great value, but he recommended careful discrimination in employing them. He

had found that carbolic acid was quite safe if used in a weak solution, one per cent, twenty-four hours subsequent to delivery. Where an antiseptic is necessary before or immediately after delivery, Condy's fluid is preferable.

Dr. Macan maintained that the vagina should previous to, during, and after labour, be irrigated with carbolic solution —and the other speakers seemed to agree with him.—*Dublin Medical Journal.* March, 1881.—J. C. R.

Intra-Splenic Injections.—The injection of remedies directly into the substance of the spleen is one of the late developments of therapeutics on the Continent. Prof. Mosler, of Greifswald, has successfully treated a case of chronic enlargement of the spleen in this way, using Fowler's solution, and a solution of carbolic acid. The operation should be preceded by external applications which will act directly on the contractile elements of the spleen, and empty the part of blood, and thus favour the action of the substance injected; thus, in using Fowler's solution, ice should be kept applied to the splenic region for some hours before injecting.

Hammond has recorded a case in which the spleen was punctured, partly for diagnostic and partly for therapeutical purposes; after the swelling had diminished in size he twice injected into the substance of the spleen 3·75 grammes of extract of ergot. The result was a rapid diminution of the tumour.

J. Jæger reports (*Thèse Inaug., Strasbourg, 1880*) a number of similar cases. In some cases of splenic leukæmia the spleen was simply punctured, in the hope that, if its tissues were sufficiently deeply penetrated with a needle of considerable size, hæmorrhagic infarction and subsequent atrophy would follow; the results did not fulfil this expectation, however. In one patient electro-puncture was practised, without result. In another the injection of sclerotinic acid was followed by death in about six hours; at the autopsy no trace of hæmorrhagic infarction could be found, though the organ had been punctured fourteen times, and electro-puncture also had been practised four times; there was only a reddish zone round one of the puncture marks. The author does not think that death was due to poisoning by sclerotinic acid, of which a deci-gramme was used, but to the rapid absorption by the splenic vessels of the total quantity of liquid injected, the sudden increase of the mass of blood in the spleen aggravating all the symptoms, a shock which a patient, weakened by long illness, is not able to resist. The conclusion is thus indicated that

splenic enlargements due to leukæmia should not be injected, more especially when the cachectic symptoms of the second stage are developed. A case of this disease is mentioned also, in which an injection into the parenchyma of the organ was followed by fatal hæmorrhage. The following are the indications laid down by Mosler for the performance of the operation :—(1) The tumour should be one of firm consistence, and the patient should show no sign of the hæmorrhagic diathesis or of extreme anæmia ; (2) External applications should be used, as mentioned above ; (3) Fowler's solution is the best agent to employ.

This article closes with the relation of a case of splenic hypertrophy, due partly to syphilis and partly to intermittent fever. Sulphate of quinine was employed by rectal injection, while sixteen intra-parenchymatous injections of Fowler's solution were practised, a half to one Pravaz syringeful being used each time. This produced rapid and considerable diminution in the size of the spleen. In another case, which had been treated for thirteen years with iron and quinine, seven injections were given, which were promptly followed by great diminution in the bulk of the organ.—(*Allgem. Med. Central Zeit.*, 97, 1880.) *Bull. Gén. de Thérap.* 30th April, 1881.

Atropine in Spermatorrhœa.—In very obstinate cases of this affection, in which the usual remedies (lupulin, camphor, bromide of potassium) seem powerless, atropine may often be used with good effect. It appears to act best when injected subcutaneously in the perinæum. Dr. Nowatschek describes (in *Wiener Med. Presse*) two old standing cases treated successfully in this way.—*Bull. Gén de Thérap.* 30th April, 1881.

The Nature of the Action of Belladonna on the System.—The *modus operandi* of belladonna in its action upon the human system, as stated by Professor T. Wharton Jones, Professor of Ophthalmic Medicine and Surgery in University College, London, in a communication upon this subject to the *American Journal of the Medical Sciences* for April, 1881, is essentially different from the views generally held, which, in the author's opinion, are for the most part fundamentally erroneous. Taking the familiar experiment of dropping atropia upon the web of a frog's foot, and demonstrating the fact that the venous stasis resulting is due to constriction of the small arteries from contraction of their muscular coat, as is evidenced by the increase in thickness of their walls, which retards the flow of blood and directly

causes congestion, he concludes that the phenomena of bella-donna poisoning stand in this order :—1st, Constriction of the small arteries by stimulation of their muscular coat; 2nd, The establishment of venous congestion in the brain and spinal cord; 3rd, The cerebral and muscular disturbance arising from the venous congestion in the brain and spinal cord.

In considering the mydriatic effect of atropia upon the pupil, the elasticity of the iris is a factor which has been generally overlooked; thus, with the two sets of muscles, the circular and antagonistic radiating fibres, there is a certain amount of physical elasticity, which requires to be taken into consideration, without a proper estimate of which no correct analysis of the motions of the pupil can be made. Dr. Jones claims that belladonna operates by directly exciting to action the radiating muscular fibres composing the *dilator pupillæ*, and not by paralysing the sphincter and giving scope to unrestrained action of the dilator. This latter view, which physiologists continue to teach, is controverted by the fact that, in paralysis of the motor oculi, the pupil is not widely dilated, but is restrained by the elasticity of the iris; it may, however, still be dilated by atropia. When the dilator and sphincter are both inactive, as they are after death, the natural resiliency of the iris keeps the pupil at a medium degree of width.

Calabar bean, although it exercises apparently a contrary effect upon the pupil, is not a real antagonist to atropia, for it acts upon the sphincter pupillæ; in an analogous way it relieves congestion by stimulating the muscular coat of the venous radicles, but has no effect upon the arterioles.

Tripolith.—This is the name of a substance imported from Germany, and intended to take the place of plaster of Paris. It is used for building, stucco work, and modelling, but also possesses properties which should render it valuable to the surgeon. It is manipulated exactly like plaster of Paris, but dries and solidifies faster; it is also lighter, harder, and less readily affected by moisture. Drs. Czerny and v. Langenbeck have used it in surgery, and recommend it highly. It is a patented material, and the invention of M. B. v. Schenk, of Zurich.—*Rev. du Batiment.* 1st February, 1881.

Treatment of Fracture of the Olecranon.—Dr. Carl Lauenstein, Hamburg, has applied the principle of Volkmann's method of treating fracture of the patella in a case of fracture of the olecranon process.

A labourer, 33 years of age, came to the Sailors' Hospital with a fresh fracture of the olecranon process, caused by a blow from the handle of a crane. The process was fractured across at its base, and displaced upwards, and there was considerable effusion round the joint. About 50 ccm. of dark fluid blood was evacuated by a puncture (presumably antiseptic), and the fragment drawn into place and fixed by a figure-of-eight bandage of sticking plaster. The forearm was fixed in extension by an external splint. The plaster was renewed at intervals, first of five days, and then eight, the position of the fragment being carefully attended to each time.

Thirty-two days after the accident the splint was removed and passive motion begun. The olecranon was firmly attached to the ulna, a ridge marking the seat of fracture. Two months after the injury the power and movements of the arm were perfect.—*Centralbl. f. Chir.* 19th March, 1881.—D. M'P.

Bladder Drainage.—Mr. Chiene, of Edinburgh, has devised a simple and effectual mode of draining the bladder, which must prove of great advantage in cases of cystitis generally, as well as in surgical affections of the perineum and its vicinity. He was led to try it first in a case of perineal fistula, in order, if possible, to keep the wound perfectly dry. "A gum-elastic catheter," he says, "is introduced and fixed to the penis with sticking plaster. Care is taken that the eye of the instrument is just within the neck of the bladder. To this catheter an india-rubber tube is fixed, of sufficient length to reach, without being strained, over the side of the bed to the floor. It then passes into a bottle. The bottle and tube are filled with carbolised water before attaching the apparatus to the catheter. Care is taken that no air can get in at any of the joints. It is well to introduce a piece of glass tubing at a convenient part for observing the direction of the flow. In order to keep the india-rubber tube steady in the bottle, a piece of glass tubing is attached to its extremity. In this way a siphon action is established, by which a constant slow current of water is carried from the bladder along the tube into the bottle. The latter should overflow into a basin, which can be emptied without disturbing the apparatus." He recommends that the cathether should have a double eye, and, if necessary, by raising the bottle, any occluding mucus may be cleared out by the backward flow into the bladder. This method is not adapted for catarrh of the bladder in the female, as the siphon action cannot be kept up.—*Edinburgh Medical Journal.* December, 1880.

Lumbar Abscess.—At a recent meeting of the Pathological Society of Dublin, Mr. Stokes records the following interesting occurrence. A child of four years was admitted to the Richmond Hospital suffering from lumbar abscess, with no evidence of spinal caries. The abscess was opened antiseptically, and after a considerable quantity of thin, ichorous, whey-like, fluid matter was evacuated, a hard and apparently movable body was felt. On introducing a forceps into the cavity five fragments of bone were extracted, and on examining the interior of the abscess with the fingers the sac was found intact, except at the point where the incision was made. The presence of bone in a chronic abscess is not usual, and its origin is not at once apparent; but it may have arisen from a piece of the ilium having been broken off, or from partial calcification of the abscess contents; the presence of the microscopic appearances of true bone in the fragments removed tends to negative the latter supposition.—*Dublin Journal of Medical Science.* April, 1881.—J. C. R.

Action of Carbolic Acid upon Ciliated Cells and White Blood Cells.—A series of valuable experiments, conducted by Dr. T. Mitchell Prudden, with a view to determining the effects of solutions of carbolic acid of varying strength, first upon the structure and secondly upon the function of certain living cells, has led to some interesting and novel results, whose value consists in their relation to the question of Listerism so called, which is now under discussion and trial by surgeons throughout the civilised world. Very decided effects were found by Dr. Prudden to take place in living ciliated and white blood cells; strong solutions caused immediate cessation of movements and death of the cells, with speedy disintegration of the protoplasm, while even dilute ones caused retardation or arrest of movements, preventing diapedesis, and modifying materially inflammatory conditions. As Dr. Prudden shows that it restrains suppuration, its value as a surgical dressing may be considered as established quite apart from its supposed influence in destroying micro-organisms, and in other ways favourably affecting the healing process, by methods upon which the present experiments do not throw any light.—*American Journal of the Medical Sciences* for January, 1881.

On the Dressing of Wounds.—By Monsieur Nicaise. This is the report of an interesting Clinical Lecture delivered in Lacunee's Hospital, in which Lister's antiseptic treatment

is strongly advocated and accurately described. The general conclusions are as follows :—

1. To avoid contagion and the inoculation of infectious maladies, by giving up the use of charpie, compresses, old linen, &c., and using in their place fresh dressings each time.

2. To abandon ointments and plasters, which increase suppuration and cause unhealthy wounds with their serious consequences.

3. To use antiseptic agents.

4. To endeavour as much as possible to obtain union by the first intention.

5. To insure thorough drainage of the wound, which plays so important a part in the successes at present obtained.

6. To insist on thorough cleanliness of everything which comes in contact with the wound.

7. To avoid all unnecessary interference or irritation of the wound.—*Gazette Médicale de Paris.* January, 1881.—J. C. R.

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